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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/icq/icq.html>). In early 1997, the *ICQ* published a 225-page *Guide to Observing Comets*; this edition is now out of print, but a revised edition is under preparation.

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

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1999 CATALOGUE OF COMETARY ORBITS

The *Catalogue of Cometary Orbits 1999* (13th edition) has been issued (by the Minor Planet Center and Central Bureau for Astronomical Telegrams) and is available for US\$30.00 (\$40.00 via airmail) from the Editor; checks can be made payable to "International Comet Quarterly", and credit-card payments can be made as usual. The 127-page catalogue includes orbital elements for comets through C/1999 N4 (and 140P for numbered comets).

IWCA II

The second International Workshop on Cometary Astronomy (IWCA II) was a very productive meeting held at New Hall at Cambridge University (U.K.) during August 14-16. A good synopsis of the meeting has been written up by meeting host Jonathan Shanklin (for publication in *The Comet's Tale*, which he has also made available at the BAA Comet Section website, <http://www.ast.cam.ac.uk/~jds/iwcarep.txt>).

As announced at the meeting, a special issue of the *ICQ* will be devoted to the *Proceedings* of the IWCA II (either the January or April 2000 issue is planned for this). Contributors should send drafts of their contributions, based on their oral or poster presentations in Cambridge, to the *ICQ* Editor by 1999 October 1. As $\text{\TeX}$ is used for printing the *ICQ*, contributors are asked either to send the text in standard (plain ASCII) text via e-mail, with figures printed on paper and sent by postal mail with a printed copy of the e-mailed paper; those who know $\text{\TeX}$ can send e-mailed text in $\text{\TeX}$ format, which uses backslashes (\) to denote commands. For example, accent marks or umlauts can be added as \' or \" to create; thus, we get Université (via Universit\'e) or für (via f\"ur). Additional details are given on the *ICQ* website (see URL <http://cfa-www.harvard.edu/iau/NonEnglish.html>), or contact the Editor for additional information.

T-shirts and polo shirts with the IWCA II logo, which have already been sold via the *ICQ* website and at the Cambridge meeting, are still being made available to interested readers. The logo can be viewed at the *ICQ* website (at URL <http://cfa-www.harvard.edu/icq/IWCA2.html>). We have established a procedure by which donations can be made to fund east-European comet observers so that they can attend these IWCA's, in which a T-shirt is given to the contributor for a \$25 donation and a polo shirt is given to the contributor for a \$35 donation. The sale of several dozen T-shirts by the *ICQ* and the BAA Comet Section helped pay for room-and-board costs for several eastern Europeans attending the IWCA II in Cambridge, but we still have not balanced our budget. Thus, donations to the fund will be taken until 1999 November 1 whereby T-shirts or polo shirts will still be given to contributors; contributors should send checks (payable to "International Comet Quarterly") to the *ICQ* Editor, note that the check is for a donation to the east-European fund, and note what type of shirt, what color, and what size (S, M, L, XL) is preferred. Credit-card donations can also be accepted. (Delivery should be sometime in November.)

Φ Φ Φ

1999 Edgar Wilson Award

The 1999 Edgar Wilson Award for the discovery of comets by amateur astronomers was announced on *IAUC* 7223 on July 14. The 1999 Award is being divided among the following six individuals or groups: Peter Williams, Heathcote, N.S.W., Australia, for comet C/1998 P1; Roy A. Tucker, Tucson, AZ, U.S.A., for P/1998 QP₅₄; Michael Jäger, Weissenkirchen i.d. Wachau, Austria, for P/1998 U3; Justin Tilbrook, Clare, South Australia, for C/1999 A1; Korado Korlević and Mario Jurić, Višnja, Croatia, for P/1999 DN₃; and Steven Lee, Coonabarabran, N.S.W., Australia, for C/1999 H1. The Edgar Wilson Award was explained in these pages in the July 1998 issue (*ICQ* 20, 111).

Φ Φ Φ

Tabulation of Comet Observations

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

◊ Comet C/1995 O1 (*Hale-Bopp*) $\Rightarrow$ 1997 Jan. 2.54: "low alt.; fairly bright twilight; the mag is little more than a guess" [HAL]. Jan. 9.53: w/ 10 $\times$ 50 B, 40' tail in p.a. 350° [HAL]. Jan. 15.53: reported tail measurements for Jan. and Feb. are of the ion tail; on this morning there was a short, stubby dust tail, the 'edges' of which were delineated by jets emanating from the central cond.; w/ 10 $\times$ 50 B, 5 $\times$ 25 tail in p.a. 343° [HAL]. Jan. 17.53: tail measurement is a lower limit; the end of it was lost in the Milky Way; w/ 10 $\times$ 50 B, 3 $\times$ 5 tail in p.a. 335° [HAL]. Jan. 30.52: moderately bright moonlight; distinct jetting structure seen in 20-cm L (two jets, one on either side of the cond., extending $\perp$ to the tail; two more, emanating from the cond. and curving back into the tailward direction); w/ 10 $\times$ 50 B, 6° tail in p.a. 323° [HAL]. Feb. 10.50: 2° dust tail in p.a. 300° [HAL]. Feb. 21.52: 6° dust tail in p.a. 291° [HAL]. Mar. 4.48: "(from this date onwards, my tail measurements refer to the dust tail); ion tail 11° long in p.a. 320°; in 41-cm L, 'ripple' structures began to be noticed, extending outward from a 'V'-shaped jetting structure on the S side of the central cond.; this appearance remained until early May; the comet, or at least the cond., was followed in 41-cm L until 1 min after sunrise" [HAL].

Mar. 6.49: 14° ion tail in p.a. 320° [HAL]. Mar. 8.50: obs. through thin cirrus; 15° ion tail in p.a. 325° [HAL]. Mar. 10.48: "13° ion tail in p.a. 330°, then lost in the Milky Way; the comet was also briefly observed w/ 10×50 B in the evening sky during dusk (Mar. 10.08)" [HAL]. Mar. 28.12: "ion tail, 14° in p.a. 5°; as seen in 10×50 B, the ion tail is bifurcated down its length, an appearance it maintained until near the end of Apr." [HAL]. Mar. 31.13: obs. through thin cirrus; 18° ion tail in p.a. 15° [HAL]. Apr. 1.11: "perihelion!; some clouds were occasionally moving through the comet's vicinity during the obs."; 14° ion tail in p.a. 15° [HAL]. Apr. 16.12: "some interference from moonlight (one day past first quarter), at least w/ the tail measurement" [HAL]. Apr. 29.15: "ion tail much fainter than earlier in the month; it is essentially visible only in 10×50 B and larger instruments" [HAL]. May 14.14: low alt.; possibly some cirrus in the comet's vicinity; tail sharply curved, starting toward p.a. 50°, curving N to p.a. 5°; the reported p.a. is a 'net' value; w/ 10×50 B, 4.5° tail in p.a. 30° [HAL]. May 22.13: very low alt., bright twilight; comet observed only briefly through a small clearing in an otherwise overcast sky; reported brightness little more than a guess [HAL]. June 5.34: sharply curved tail, initially toward the S, then curving E toward the given p.a.; w/ 10×50 B, 2° tail in p.a. 70° [HAL]. June 9.35: w/ 10×50 B, 2° tail in p.a. 95° [HAL]. June 18.34: "bright moonlight; comet just barely visible w/ naked eye as a dim 'spot' against the bright background sky; this was my last naked-eye sighting of this comet" [HAL]. June 22.36: "low alt., twilight; comet observed for only 5 min before setting behind distant cloud bank; reported brightness is somewhat of a guess" [HAL]. Aug. 31.49: "low alt.; fairly bright twilight; probably not much more than the central cond. was seen; the cond. did not seem as pronounced on subsequent mornings, suggesting the possibility of a recent outburst of activity" [HAL]. Sept. 2.48: low alt., twilight [HAL]. Oct. 31.49 and Nov. 2.50: low alt. [HAL]. Nov. 18.45: "very low alt.; the comet's maximum elevation was 1° above the S horizon; also interference from bright moonlight; the obs. probably would not have been possible w/o the aid of the nearby stars HD 63926 and HD 64067; this was the final obs. of this comet from NM" [HAL].

1998 Feb. 22.98: this and the other Feb. 1998 observations of this comet were made from onboard a ship in the Caribbean Sea [HAL]. Feb. 27.98: intermittent clouds; obs. brief [HAL]. May 23.39: "bright, sharp, stellar cond., indicative of a recent outburst of nuclear activity" [HAL].

1999 May 4.40: w/ 25.4-cm L (71×), comet appeared more diffuse and w/ less central cond. than on Apr. 12 [SEA]. May 19.44: surprisingly bright; outburst suspected, although in 25.4-cm L, no distinct central cond. was visible [SEA]. May 22.32: moonlight interference [RAE]. June 5.31: "comet appears to have returned to a state of low activity" [RAE]. June 7.30: irregular in shape, with some cond. evident [RAE].

◊ *Comet C/1996 J1 (Evans-Drinkwater)* ⇒ 1997 May 13.44: low alt., twilight [HAL]. July 11.44: the nearby galaxy Zw 524-9 could be seen w/ difficulty [HAL].

◊ *Comet C/1997 BA₆ (Spacewatch)* ⇒ 1999 May 17.48: comet located quite close to 11th-mag star, which may have affected estimate [PEA].

◊ *Comet C/1997 D1 (Mueller)* ⇒ 1997 Nov. 24.28: "the mag estimate is somewhat derived from memory, due to the comet's rapidly moving over some faint stars; it is possible, based upon the other observations, that the given brightness is a bit of an over-estimate; however, the comet was clearly brighter this evening than on other occasions" [HAL].

◊ *Comet C/1997 H2 (SOHO)* ⇒ 1997 May 14.13: "low alt.; also, possibly some cirrus clouds in the comet's vicinity; this limiting brightness assumes the general correctness of the orbital elements on *IAUC* 6650; ≈ 1° radius around the comet's expected position was searched; poor weather prevented obs. attempts on subsequent nights" [HAL].

◊ *Comet C/1997 J2 (Meunier-Dupouy)* ⇒ 1997 June 2.27: "the comet is located quite close to the galaxy NGC 3364; the two objects are similar in appearance, w/ the galaxy being slightly larger but w/ a slightly lower surface brightness" [HAL]. July 11.24: obs. slightly affected by proximity of the bright star λ Dra [HAL]. Nov. 6.09: obs. somewhat affected by moonlight and by smoke (from controlled forest burns) in the area [HAL]. 1998 Mar. 10.51: obs. somewhat affected by cirrus and by nearby 11th-mag star [HAL]. Apr. 4.49: obs. affected by nearby 11th-mag star [HAL].

◊ *Comet C/1997 N1 (Tabur)* ⇒ 1997 Sept. 12.11: obs. attempt affected by moonlight and poor-transparency conditions (significant moisture in the atmosphere); the given estimate is of a very diffuse suspect that was seen; however, subsequent unsuccessful obs. attempts indicate that this was nothing more than an artifact created w/in the eyepiece by the poor conditions [HAL]. Sept. 20.10: the first attempt made under relatively good sky conditions; no suspects were seen; the nearby galaxy NGC 5005 was seen w/o difficulty [HAL].

◊ *Comet C/1997 O1 (Tilbrook)* ⇒ 1997 July 24.15: low alt. (as was the case for all obs. of this comet); transparency conditions not especially good [HAL]. Aug. 29.14: "difficult object to observe at low alt.; this obs. confirms a suspected obs. made the previous evening" [HAL].

◊ *Comet C/1997 T1 (Utsunomiya)* ⇒ 1997 Oct. 6.23: "distinct cond. near leading side of somewhat-fan-shaped coma; from this cond. there emanates a short, spine-like tail that is enshrouded w/in the rest of the coma; the comet maintained this same general appearance throughout its apparition, although as the coma continued to grow more fan-shaped by mid-Nov., the tail-like structure w/in the coma was no longer evident" [HAL].

◊ *Comet C/1998 H1 (Stonehouse)* ⇒ 1998 Apr. 26.26: elongated coma; long dimension roughly N-NW by S-SE; possible beginning of weak tail structure toward S-SE; rapid motion toward the NW, obvious w/in a few minutes; same basic appearance on May 1 [HAL].

◊ *Comet C/1998 J1 (SOHO)* ⇒ 1998 May 6.77: daylight searches, also w/ 10×70 B [HAL]. May 8.09: "w/ the exception of May 10.10, this and all subsequent unsuccessful searches were made from a high ridge (elevation ≈ 2750 m)

overlooking a desert floor ≈ 1500 m lower; the initial searches were made in bright twilight, but darker skies were utilized on subsequent days; the search attempts also utilized 10×70 B, and searches were generally made by sweeping along and near the horizon; in 20-cm L, 5th-mag stars were routinely swept up, even when near the horizon in moderately bright twilight; limiting brightness estimates are based upon successful observations of previous comets observed under similar geometric conditions — e.g., C/1975 V1 (West) in Feb. 1976 and 1P/Halley in late Jan. 1986" [HAL]. May 13.11: for this and subsequent unsuccessful attempts, searches were concentrated on the specific predicted positions of the comet, which subsequently were determined to be 1° – 2° off, due to poor initial positions reported by SOHO project (which caused search ephemerides to be problematical); general sweeping, including w/ 10×70 B, was also included in the search attempts [HAL]. May 23.35: all tail measurements for this comet refer to the ion tail, which was straight and prominent; on this evening, the comet was visible to the naked eye, but was difficult to discern because of proximity to ζ Ori [HAL]. May 25.36: w/ 10×70 B, 8° tail in p.a. 134° [HAL]. May 26.36: in addition to the ion tail, a faint, broad 1.5° dust tail was seen, beginning in p.a. 110° and curving toward p.a. 100° ; w/ 7.0-cm B, 7° tail in p.a. 136° [HAL].

◊ *Comet C/1998 K5 (LINEAR)* $\Rightarrow$ 1998 May 31.33: on all occasions the comet appeared essentially stellar; the comet's motion was quite rapid; the general appearance was that of a near-Earth asteroid making a close approach [HAL].

◊ *Comet C/1998 M1 (LINEAR)* $\Rightarrow$ 1998 June 28.23: "estimate is of a very faint suspect that was thought might possibly be the comet; however the unsuccessful attempt to confirm this obs. the following night suggests that this was probably a false alarm (possibly due to two very faint stars shown on the Digital Sky Survey)" [HAL].

◊ *Comet C/1998 M2 (LINEAR)* $\Rightarrow$ 1998 June 29.22: obs. somewhat affected by nearby 11th-mag star [HAL].

◊ *Comet C/1998 M5 (LINEAR)* $\Rightarrow$ 1999 May 15.94: star of mag 13 in coma [BOU].

◊ *Comet C/1998 P1 (Williams)* $\Rightarrow$ 1998 Sept. 19.25: obs. from Rarotonga, Cook Is. [PRY].

◊ *Comet C/1998 T1 (LINEAR)* $\Rightarrow$ 1999 May 18.77: very diffuse and difficult to see near bright star [SEA]. May 22.73: "I searched for this comet for 20 min in light-polluted E sky at beginning of twilight, but no comet seen" [RAE]. June 18.60: close to stars; mag estimate somewhat uncertain [SEA]. June 21.74: "w/ 11-cm L ($16\times$), outer coma very faint and therefore coma dia. quite difficult to measure; actual coma may have been larger than that given above; coma consists of an inner brighter and centered region of size $\approx 4'$, surrounded by an extensive outer region; coma is symmetrical" and evidently round in shape [RAE]. July 2.96: cirrus clouds interfering [DES01]. July 4.42: visibility of comet enhanced using Swan Band filter [SEA]. July 7.57: Guide 7.0 software used [YOS02]. July 9.39: "poor conditions; comet very diffuse and therefore difficult to observe in the nebulous and crowded Milky Way background; outer coma very delicate and seems to only appear at low magnif." [RAE]. July 10.89, 11.90, 12.93, and 15.93: Guide V.07 software used for reference stars [DES01]. July 13.54: "despite my partially-light-polluted skies, comet is still fairly easy in B; interestingly, the coma looked more condensed in B than in the telescope (this may be an effect of the bright Milky Way background)" [RAE]. Aug. 1.33: "coma gave an extended triangular impression, but it was difficult to measure the angle of the extension" [RAE].

◊ *Comet C/1998 U5 (LINEAR)* $\Rightarrow$ 1999 May 22.05: small, strong central cond. [LEH]. June 4.68: all frames (of this and other comets) were obtained by K. Kadota, at Ageo, Saitama, and measured by Yoshida, as usual [YOS04].

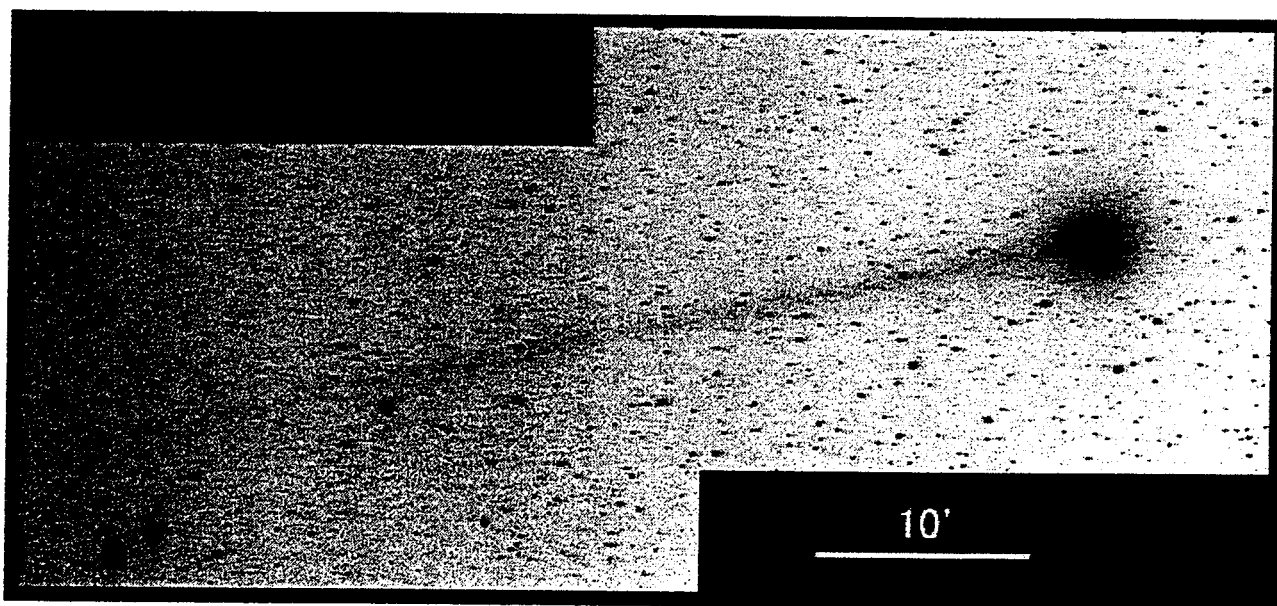
◊ *Comet C/1999 H1 (Lee)* $\Rightarrow$ 1999 Apr. 18.03, 19.17, 21.11, May 3.95, and 4.92: slightly brighter w/ Swan-band filter [DEA]. Apr. 22.19, May 13.07, 15.05, June 5.96, 7.92, and 16.89: brighter w/ Swan-band filter [DEA]. May 2.92: Guide 7.0 software used for ref. stars [DES01]. May 3.39: w/ 25.4-cm L ($61\times$), fan-shaped coma; w/ Lumicon Swan-band filter, coma slightly enhanced; $30'$ tail [SEA01]. May 6.44: alt. $\leq 13^\circ$; comet looks like C/1998 M5 [YOS04 and K. Kadota, Ageo, Saitama, Japan]. May 7.40: w/ 25.4-cm L ($61\times$), 1° tail [SEA01]. May 8.96: brightness unchanged w/ Swan-band filter [DEA]. May 9.55: visibility enhanced using Swan Band filter [SEA]. May 9.92: at $67\times$ and $92\times$, comet very diffuse; fan-like tail; very obvious change in appearance using comet filter; Guide V.07 software used for reference stars; comet very close to star of mag 8.8; comet same brightness as SAO 200236 and HIP 45745 [DES01]. May 10.33: w/ B, coma elongated and cond. offset; $5'$ tail in p.a. 110° seen w/ 25-cm L [RAE]. May 11.51, June 4.49, and 11.49: Guide 7.0 software used [YOS02]. May 13.07, 15.05, 16.04, and June 16.89: faint tail [DEA]. May 13.47, 20.47, and June 4.47: HOC2.exe software used [NAG08]. May 16.09: w/ 32-cm L ($75\times$), strong cond. and 0.2° tail in p.a. 115° [CRE01]. May 16.45: w/ 25×100 B, comet shows strong central cond., and the tail has become a little more intense [SEA]. May 17.41: w/ 25×100 B, short fan-shaped tail to $\approx 16'$ length in p.a. $\approx 115^\circ$ – 130° [SEA]. May 18.15: central cond. dia. of $< 3''$ and mag 13.0; coma was asymmetrical toward a very diffuse tail whose R image showed a faint, embedded radial feature extending 2.3 at p.a. 108° [ROQ]. May 18.05 and June 7.92: very faint tail [DEA]. May 18.85 and June 3.88: comet $\sim 5^\circ$ above horizon [LEH]. May 19.28: w/ B, comet appears elongated, but in 11-cm L no tail visible [RAE]. May 19.42: w/ 25×100 B and 25.4-cm L, a plasma tail (slightly curved) and an apparent anti-tail were visible; in the reflector, the brighter part of the tail and the anti-tail were $\approx$ the same intensity, giving the appearance of two nebulous 'wings'; in 25×100 B, tail appeared $20'$ long in p.a. 130° , w/ anti-tail $\approx 8'$ long in p.a. 0° [SEA]. May 20.47: GUIDE 7.0 software used [NAK01]. May 22.30: moonlight and haze interference [RAE]. May 31.88: still some twilight; at moonrise; comet alt. 18° ; differential extinction corrections not > 0.1 mag; good transparency [PER01 and VIT01].

June 1.89: "comet alt. 18° ; differential extinction corrections < 0.1 mag; comet relatively close to 5.86-mag star; several consecutive m_1 estimates performed, while sky darkened and comet lowered; we selected the estimate done at the time the comet was best visible" [PER01 and VIT01]. June 2.31: poor conditions [RAE]. June 2.89: "comet alt. 17° ; differential extinction corrections not > 0.1 mag; comet relatively close to 7.26-mag star; several consecutive m_1 estimates performed, while sky darkened and comet lowered; we selected the estimate done at the time the comet was

best visible" [PER01 and VIT01]. June 2.31: poor conditions [RAE]. June 2.89: "comet alt. 17° ; differential extinction corrections not > 0.1 mag; comet relatively close to 7.26-mag star; several consecutive m_1 estimates performed, while sky darkened and comet lowered; we selected the estimate done at the time the comet was best visible; scattered cumulus clouds" [PER01 and VIT01]. June 4.10: poor conditions (haze + thin cirrus); comet 14° above horizon [CRE01]. June 4.49: $12'$ tail in p.a. 125° w/ 25.4-cm R [YOS02]. June 5.28: "coma contains an intense inner disk; very impressive!" [RAE]. June 5.89: the comet was less bright than HIP 41652 [DES01]. June 5.89, 9.96, 11.89, 15.90, 16.90, 17.90, and 18.90: Guide V.07 software used for reference stars [DES01]. June 5.89: comet alt. 15° [PER01 and VIT01]. June 6.29: faint outer coma not visible, possibly due to light pollution [RAE]. June 6.44: "broad, diffuse tail $0^\circ 2$ long in p.a. 110° (probably would have been longer if comet viewed in a darker sky)" [PEA]. June 7.08: comet appears brighter w/ Swan-band filter [SHA04]. June 7.89: "comet alt. 13° - 14° during estimate procedure; all 6 comparison stars were within 1° of the comet's alt.; differential extinction corrections < 0.1 mag; 10th-mag star in coma; we both independently agree that the comet looks fainter than two nights ago; good transparency with horizontal visibility > 70 km towards the Atlantic Ocean at sunset" [PER01 and VIT01]. June 9.89: comet alt. 13° ; differential extinction corrections not > 0.1 mag [PER01]. June 9.96: small central cond. very obvious with comet filter [DES01]. June 11.89: "comet alt. 13° ; differential extinction corrections not > 0.1 mag; obs. with some twilight and a bit hasty, due to fog bank over the Atlantic moving inland" [PER01]. June 13.27: w/ 25.6-cm f/5 L ($42\times$ and $169\times$), $0^\circ 6$ curved tails spanning p.a. 110° - 140° ; asymmetric coma towards NE, w/ jets in p.a. 350° , 20° , and 70° [BIV]. June 14.28: w/ 25.6-cm f/5 L ($42\times$): $0^\circ 7$ thinner, main tail in p.a. 115° [BIV]. June 14.89: "comet alt. 10° - 11° ; differential extinction corrections not > 0.2 mag; tried to use comparison stars within 1° of the comet's alt., but forced to include one star with $B-V = +1.0$, for which I computed $m_v = V + 0.16(B-V)$; this agreed better with my visual impression of the star against the whole sequence; transparency not the best; very distant cirrus clouds over the Atlantic, lower than the comet and not interfering" [PER01]. June 18.89: comet alt. 8° ; differential extinction corrections not > 0.2 mag; 3 comparison stars within 1° of the comet's alt.; moonlight [PER01]. June 18.90: interference from cirrus clouds [DES01]. June 19.26: w/ 25-cm L ($75\times$), thin tail visible for $0^\circ 5$ in p.a. $\approx 130^\circ$ [RAE]. June 19.26: "obs. at $\approx 12^\circ$ alt.; however, the comparison stars used were at the same alt. and hence no extinction corr. was applied" [RAE].

July 2.25, 3.26, and 4.26: w/ 25.6-cm f/5 L ($42\times$), comet very low, and twilight may have affected dia. estimate, but comparison stars very close and good sky transparency [BIV]. July 27.77: $8/6$ anti-tail in p.a. 107° [YOS04]. July 29.77: broad $17/5$ anti-tail in p.a. 109° (the other tail is "thin") [YOS04 and K. Kadota, Ageo, Saitama, Japan]. July 31.77: $15/6$ anti-tail in p.a. 111° [YOS04].

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Above is a 120-sec CCD exposure of comet C/1999 H1 (Lee) beginning at 1999 Aug. 31.756 UT, taken by Takuo Kojima (Chiyoda, Japan) with a 25-cm f/6 reflector (+ SBIG ST-8 CCD).

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◇ Comet C/1999 H3 (LINEAR) $\Rightarrow$ 1999 May 5.93, 16.95, and June 3.95: small, strong central cond. [LEH]. June 14.99: comet motion easily noticeable against a nearby 13th-mag star; GSPC P101 sequence used [PER01].

◇ Comet C/1999 J2 (Skiff) $\Rightarrow$ 1999 July 4.18: central cond. of $< 2''$ and mag 15.5; coma was symmetrical w/o a propensity toward tail formation [ROQ].

◇ Comet C/1999 J3 (LINEAR) $\Rightarrow$ 1999 July 18.02: "comet easily seen; slightly condensed, w/ very diffuse outer

coma; previous obs. (July 10.97) may be underestimated, because a hint of a faint outer comet was suspected then, but not fully taken into account in the m_1 estimate" [BOU].

◊ *Comet C/1999 K3 (LINEAR)* $\Rightarrow$ 1999 June 4.96 and 9.94: small, strong central cond. [LEH]. July 2.17: central cond. of $< 2''$ and mag 18.3; coma was faint and asymmetrical in p.a. 192° [ROQ].

◊ *Comet C/1999 K6 (LINEAR)* $\Rightarrow$ 1999 June 4.97 and 9.95: small, strong central cond. [LEH]. June 27.19: central cond. of $< 2''$ and mag 17.1; coma appeared faint and irregularly defined w/o significant substructure [ROQ].

◊ *Comet C/1999 K8 (LINEAR)* $\Rightarrow$ 1999 June 9.97: small, strong central cond. [LEH]. July 10.93: comet only $30''$ - $35''$ from star of mag 10.1, but it was definitely seen under high magnification ($400\times$) as a small, slightly condensed object; brightness estimate is rather uncertain because of the unfavorable observing geometry [BOU].

◊ *Comet C/1999 N2 (Lynn)* $\Rightarrow$ 1999 July 16.87 and 17.88: small, strong central cond.; Guide V.07 software was used for reference stars [DES01]. July 17.88: faint fan tail in p.a. 135° - 150° ; [DES01]. July 19.35: brief obs.; bright and well-condensed object, noticeably enhanced using Swan Band filter [SEA]. July 20.34: comet appeared bright and slightly bluish in 25×100 B and was well condensed, though without a clearly defined central cond. [SEA]. July 21.60: diffuse object of low surface brightness, difficult to see against sky background with moonlight interference [PEA]. July 29.89: strong central cond.; Guide V.07 software used for reference stars; obs. made before moonrise [DES01]. July 31.46 and Aug. 1.48: HOC2.exe software used [NAG08].

◊ *Comet 2P/Encke* $\Rightarrow$ 1997 June 5.35: low alt.; the comet is small and condensed, and appears only slightly nonstellar [HAL]. June 22.38: comet is much larger and more diffuse than earlier in the month [HAL].

◊ *Comet 10P/Tempel 2* $\Rightarrow$ 1999 May 16.02: very faint small nebula, close to star of mag 15.5; difficult object, but definitely seen [BOU]. June 3.92: comet near 13th-mag star [MEY]. June 6.21: central cond. of dia. $< 2''$ and mag 15.1; coma was irregularly defined and asymmetrical in p.a. 251° [ROQ]. June 12.41 and 12.57: w/ 25.6-cm $f/5$ L ($169\times$), stellar nucleus of mag 14.7 [BIV]. June 14.46: w/ 25.6-cm $f/5$ L ($169\times$), stellar nucleus of mag 14.5 [BIV]. July 1.92: comet elongated at $92\times$ [DES01]. July 2.94: comet was very faint; comet elongated at $92\times$ [DES01]. July 2.94, 10.93, 11.94, 12.94, and 15.97: Guide V.07 software used for reference stars [DES01]. July 3.33: w/ 25.6-cm $f/5$ L ($169\times$), stellar nucleus of mag 13.8 [BIV]. July 4.33: w/ 25.6-cm $f/5$ L ($169\times$), central cond. of mag 14.2 [BIV]. July 7.60: Guide 7.0 software was used [YOS02]. July 10.36 and 11.34: w/ 25.6-cm $f/5$ L ($169\times$), central cond. of mag 14.6; jets in p.a. 315° (length $1'$) and 350° ($1.5'$) [BIV]. July 14.58: UX Oph chart was used [YOS02]. July 16.31: w/ 25.6-cm $f/5$ L ($169\times$), central cond. of mag 14.4; jets in p.a. 250° (length $1.5'$), 300° ($1'$), and 345° ($2'$) [BIV]. July 31.48: HOC2.exe software was used [NAG08].

◊ *Comet 21P/Giacobini-Zinner* $\Rightarrow$ 1998 June 14.21: an extremely faint candidate was suspected, but could not be verified as being the comet; the attempt the subsequent night was inconclusive but suggested that this was a false alarm [HAL]. June 28.33: another extremely faint candidate was suspected — possibly even w/ motion — but again could not be verified as being the comet [HAL].

◊ *Comet 29P/Schwassmann-Wachmann 1* $\Rightarrow$ 1997 Feb. 11.44: this obs. confirms a faint, diffuse suspect briefly observed the previous morning [HAL]. May 8.27: "the comet was unsuccessfully searched for, under slightly inferior conditions, the previous evening; the overall appearance is diffuse and amorphous and suggests the outburst is fairly 'old'" [HAL]. June 3.19: "distinctly brighter and more condensed than previous obs. 4 weeks earlier, clearly indicative of outburst activity during the interim" [HAL]. June 30.18: alt. a bit low; obs. slightly hampered by an ≈ 8 th-mag star a few arcmin away [HAL]. Nov. 28.53: low alt., twilight [HAL]. 1998 Jan. 25.47: "appearance almost completely stellar, w/ just the slightest hint of diffuseness; the outburst has apparently just started" [HAL]. Jan. 26.48: appearance slightly more nonstellar than during previous morning [HAL]. Mar. 20.29: "moderately sharp central coma region, indicative of recent outburst activity" [HAL]. Apr. 21.25: mediocre transparency conditions [HAL]. 1999 May 6.63 and 13.62: this looks like 'after-glow' of previous outburst; comet very diffuse [NAK01]. June 5.58: in a fresh outburst [NAK01]. July 1.93: comet very diffuse and difficult; Guide V.07 software was used for reference stars [DES01].

◊ *Comet 37P/Forbes* $\Rightarrow$ 1999 June 12.56: w/ 25.6-cm $f/5$ L ($169\times$), central cond. of mag 14.4; $2'$ tail in p.a. 260° ; substantial brightening (> 1.5 mag) since May 19 [BIV]. July 10.59: w/ 25.6-cm $f/5$ L ($169\times$), $1\frac{1}{2}$ central bar in p.a. 250° ; comet getting more diffuse [BIV].

◊ *Comet 43P/Wolf-Harrington* $\Rightarrow$ 1997 Aug. 3.45: faint and diffuse; verification of suspect observed previous morning [HAL]. Oct. 13.49: "reported mag is essentially a guess, due to preoccupation w/ other observations; there is a distinct star-like cond. surrounded by a vague, diffuse coma; at first this cond. was thought to be a background star, but common motion w/ the coma showed it to be a feature of the comet; unfortunately, this was the last occasion this comet was observed" [HAL].

◊ *Comet 46P/Wirtanen* $\Rightarrow$ 1997 Jan. 3.09: the comet is close to the spiral galaxy MCG -3-58-3, which is smaller and brighter than the comet [HAL].

◊ *Comet 55P/Tempel-Tuttle* $\Rightarrow$ 1998 Jan. 4.48: obs. hampered by nearby 6.5-mag star [HAL]. Jan. 17.19: obs. affected by cirrus, and then moonlight [HAL]. Jan. 23.18: brightness estimate affected by cirrus and rich star field [HAL]. Feb. 13.09: obs. affected by moonlight [HAL]. Feb. 26.01: obs. made from onboard a ship in Caribbean Sea [HAL]. Mar. 20.10: low alt., fairly bright twilight [HAL].

◊ *Comet 62P/Tsuchinshan 1* $\Rightarrow$ 1998 Mar. 26.14: the comet is very vague and diffuse; it exhibited this same basic appearance throughout the apparition [HAL]. Mar. 28.16: mediocre transparency conditions; fairly low alt. [HAL]. Apr. 15.14: mediocre transparency conditions; obs. also affected by zodiacal light [HAL].

◊ *Comet 78P/Gehrels 2* $\Rightarrow$ 1997 Sept. 1.45: small, condensed coma; there is a near-cond. near the leading side of the coma; this general appearance was maintained throughout most of the rest of the apparition [HAL]. Oct. 9.45: estimate affected by faint star w/in coma [HAL].

◊ *Comet 81P/Wild 2* $\Rightarrow$ 1997 Jan. 16.41: central cond. near the apex of a fan-shaped outer coma extending roughly N; this appearance typified that of the comet throughout most of its apparition, except that the direction of the 'fan' rotated eastward [HAL]. Mar. 4.21: obs. hampered by nearby bright star [HAL]. Mar. 10.25: obs. apparently obtained through thin cirrus; there are hints of a short, broad tail extending roughly eastward [HAL]. May 25.19: poor conditions; although the sky was 'clear', rain was falling; obs. hurried [HAL]. July 27.15: sky conditions not especially good, w/ occasional clouds passing through [HAL].

◊ *Comet 88P/Howell* $\Rightarrow$ 1998 Apr. 21.24: mediocre-transparency conditions [HAL]. June 4.18: very vague and diffuse appearance; the comet maintained this appearance throughout June [HAL].

◊ *Comet 93P/Lovas 1* $\Rightarrow$ 1999 Apr. 19.88: small, strong central cond. [LEH].

◊ *Comet 95P/Chiron [(2060) Chiron]* $\Rightarrow$ 1997 Apr. 2.40: appearance completely stellar [HAL]. 1998 May 2.33: extremely faint object near visual threshold; appearance essentially completely stellar [HAL].

◊ *Comet 103P/Hartley 2* $\Rightarrow$ 1997 Sept. 5.22: obs. attempt affected by nearby 10th-mag star [HAL]. Sept. 23.14: "some very faint diffuse objects were suspected, but all apparently turned out to be faint stars; none were seen to move over a 2-hr interval; there apparently was some brightening between this evening and the first positive obs. four evenings later" [HAL]. 1998 Jan. 2.07: obs. slightly affected by cirrus and moonlight [HAL].

◊ *Comet 104P/Kowal 2* $\Rightarrow$ 1997 Oct. 27.22: an ephemeris based on an old orbit was used for this attempt, and thus the bulk of the effort may have been focused on an erroneous position; however, even if the position was off slightly, the comet was clearly not as bright as it was when positively detected 1 month later [HAL]. Nov. 24.09: this obs. confirms a suspect observed through thin cirrus four evenings earlier (Nov. 20.18) [HAL]. 1998 Jan. 26.16: low alt. [HAL].

◊ *Comet 118P/Shoemaker-Levy 4* $\Rightarrow$ 1997 Jan. 16.37: comet distinctly more diffuse than during previous observations, although the surface brightness is still moderately high [HAL].

◊ *Comet 134P/Kowal-Vávrová* $\Rightarrow$ 1999 Apr. 20.70: photograph taken by S. Kashiwagi (and published on cover of July issue of *Tenmon Guide* magazine) notes $m_1 \sim 15$ [NAK01].

◊ *Comet 140P/Bowell-Skiff* $\Rightarrow$ 1999 Apr. 18.81, 19.83, May 3.86, 5.86, 16.88, and 17.88: small, strong central cond. [LEH].

◊ *Comet P/1998 U3 (Jäger)* $\Rightarrow$ 1999 May 8.15: central cond. of $> 2''$ and mag 16.1; tail was faint and diffuse w/o a well-defined substructure [ROQ].

◊ *Comet P/1999 E1 (Li)* $\Rightarrow$ 1999 Apr. 18.84 and 19.79: small, strong central cond. [LEH]. May 20.48: Guide 7.0 software used [NAK01].

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TABULATED DATA

The headings for the tabulated data are as follows: "DATE (UT)" = Date and time to hundredths of a day in Universal Time; "N" = notes [* = correction to observation published in earlier issue of the *ICQ*; an exclamation mark (!) in this same location indicates that the observer has corrected his estimate in some manner for atmospheric extinction (prior to September 1992, this was the standard symbol for noting extinction correction, but following publication of the extinction paper — July 1992 *ICQ* — this symbol is only to be used to denote corrections made using procedures different from that outlined by Green 1992, *ICQ* 14, 55-59, and in Appendix E of the *ICQ Guide to Observing Comets* — and then only for situations where the observed comet is at altitude $> 10^\circ$); '&' = comet observed at altitude 20° or less with no atmospheric extinction correction applied; '\$' = comet observed at altitude 10° or lower, observations corrected by the observer using procedure of Green (*ibid.*); for a correction applied by the observer using Tables Ia, Ib, or Ic of Green (*ibid.*), the letters 'a', 'w', or 's', respectively, should be used].

"MM" = the method employed for estimating the total (visual) magnitude; see article on page 186 of the Oct. 1996 issue [B = VBM method, M = Morris method, S = VSS or In-Out method, I = in-focus, C = unfiltered CCD, c = same as 'C', but for 'nuclear' magnitudes, V = electronic observations — usually CCD — with Johnson V filter, etc.]. "MAG." = total (visual) magnitude estimate; a colon indicates that the observation is only approximate, due to bad weather conditions, etc.; a left bracket ([]) indicates that the comet was not seen, with an estimated limiting magnitude given (if the comet IS seen, and it is simply estimated to be fainter than a certain magnitude, a "greater-than" sign ($>$) must be used, not a bracket). "RF" = reference for total magnitude estimates (see pages 98-100 of the October 1992 issue, and Appendix C of the *ICQ Guide to Observing Comets*, for all of the 1- and 2-letter codes). "AP." = aperture in centimeters of the instrument used for the observations, usually given to tenths. "T" = type of instrument used for the observation (R = refractor, L = Newtonian reflector, B = binoculars, C = Cassegrain reflector, A = camera, T = Schmidt-Cassegrain reflector, S = Schmidt-Newtonian reflector, E = naked eye, etc.). "F/" and "PWR" are the focal

ratio and power or magnification, respectively, of the instrument used for the observation — given to nearest whole integer (round even); note that for CCD observations, in place of magnification is given the exposure time in seconds (see page 11 of the January 1997 issue).

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

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

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Key to observers with observations published in this issue, with 2-digit numbers between Observer Code and Observer's Name indicating source [18 = Coordinated amateur Polish group; 35 = South American observers (c/o Jose Guilherme de Souza Aguiar); etc.]. New additions to the Observer Key have asterisks (*) preceding the 5-character code:

*ALV 35	Avelino A. Alves, Brazil	LEH	Martin Lehky, Czechoslovakia
AM001 35	Alexandre Amorim, Brazil	MAR02 13	Jose Carvajal Martinez, Spain
*BAC03 45	Antonio Bachi, Uruguay	MAT08	Michael Mattiazzo, S. Australia
BIV	Nicolas Biver, France	MEY 28	Maik Meyer, Germany
BOU	Reinder J. Bouma, Netherlands	MIT 16	Shigeo Mitsuma, Saitama, Japan
CHE03 33	Kazimieras T. Cernis, Lithuania	NAG02 16	Takashi Nagata, Hyogo, Japan
CHR 18	Antoni Chrapek, Pikulice, Poland	NAG08 16	Yoshimi Nagai, Yamanashi, Japan
COM 11	Georg Comello, The Netherlands	NAK01 16	Akimasa Nakamura, Ehime, Japan
COO02	Tim P. Cooper, South Africa	NAP 35	Tasso A. Napoleao, Brazil
CRE01	Phillip J. Creed, OH, U.S.A.	OVE	M. D. Overbeek, South Africa
DEA	Vicente F. de Assis Neto, Brazil	PEA	Andrew R. Pearce, Australia
DES01	Jose G. de Souza Aguiar, Brazil	PER01	Alfredo J. S. Pereira, Portugal
DRA02 18	Michal Drahos, Krakow, Poland	PLE01 18	Janusz Pleszka, Poland
DRE01	Colin E. Drescher, Australia	PRY	Jim Pryal, WA, U.S.A.
FAJ 18	Tomasz Fajfer, Torun, Poland	RAE	Stuart T. Rae, New Zealand
FRE01 45	Jose Rodriguez Freitas, Uruguay	RES 18	Maciej Reszelski, Poland
*GAR04 35	Jaime Garcia, Mendoza, Argentina	ROQ	Paul Roques, AZ, U.S.A.
*GRE03 15	Trevor Green, Pretoria, S Africa	SAD 18	Piotr Sadowski, Poland
HAL	Alan Hale, U.S.A.	SAN04 38	Juan M. San Juan, Madrid, Spain
HAS02	Werner Hasubick, Germany	SAN07 32	Gábor Santa, Hungary
HAS08 16	Yuji Hashimoto, Hiroshima, Japan	SEA	David A. J. Seargent, Australia
HOR02 23	Kamil Hornoch, Czech Republic	SEA01	John Seach, Australia
JAR01 18	Marcin Jarski, Poland	SHA02 07	Jonathan D. Shanklin, England
JON	Albert F. Jones, New Zealand	SHA04	Gregory T. Shanos, U.S.A.
*JON07 15	Tony Jones, Cape Town, S. Africa	SOU01 35	William Carlos de Souza, Brazil
*KAC01 23	Richard Káčerek, Czech Republic	SPE01 18	Jerzy Speil, Poland
KIDO1 18	Krzysztof Kida, Elblag, Poland	SUZ02 16	Masayuki Suzuki, Japan
KOC03 32	Antal Kocsis, Hungary	SZA	Sándor Szabó, Sopron, Hungary
KOS	Attila Kósa-Kiss, Romania	TOT03 32	Zoltán Tóth, Hungary
*KOU 23	Jakub Koukal, Czech Republic	TR002 35	Victor Trombotto, Argentina
KRY02	Washington Kryzanowski, Uruguay	VIT01 40	Catarina Vitorino, Portugal
KUJ 23	Josef Kujal, Czech Republic	YOS02 16	Katsumi Yoshimoto, Japan
KWI 18	Maciej Kwinta, Krakow, Poland	YOS04 16	Seiichi Yoshida, Ibaraki, Japan

Comet C/1995 01 (Hale-Bopp)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 02.54	I	3	:	SC	5.0	B		10					HAL
1997 01 09.53	B	3.1		SC	0.0	E		1					HAL
1997 01 15.53	S	2.9		SC	0.0	E		1					HAL
1997 01 17.53	B	2.8		SC	0.0	E		1					HAL
1997 01 30.52	B	2.4		SC	0.0	E		1					HAL
1997 02 02.50	B	2.2		SC	0.0	E		1			2.5	325	HAL
1997 02 10.50	B	1.5		SC	0.0	E		1			8	335	HAL
1997 02 16.51	B	1.2		SC	0.0	E		1					HAL
1997 02 21.52	B	1.0		SC	0.0	E		1			11	313	HAL
1997 03 04.48	B	0.2		SC	0.0	E		1			6	275	HAL
1997 03 06.49	B	0.0		SC	0.0	E		1			12	280	HAL
1997 03 08.50	B	-0.1		SC	0.0	E		1			11	280	HAL
1997 03 10.48	B	-0.2		SC	0.0	E		1			13	300	HAL
1997 03 28.12	B	-0.9		SC	0.0	E		1			13	335	HAL
1997 03 29.12	B	-0.9		SC	0.0	E		1			13	335	HAL
1997 03 31.13	B	-1.1:		SC	0.0	E		1			13	345	HAL
1997 04 01.11	B	-1.0		SC	0.0	E		1			17	340	HAL
1997 04 02.11	B	-0.9		SC	0.0	E		1			14	345	HAL
1997 04 07.13	B	-0.8		SC	0.0	E		1			15	350	HAL
1997 04 08.12	B	-0.9		SC	0.0	E		1			18	350	HAL
1997 04 16.12	B	-0.7		SC	0.0	E		1			9	10	HAL
1997 04 29.15	B	0.1		SC	0.0	E		1			14	10	HAL
1997 05 01.14	B	0.2		SC	0.0	E		1			17	15	HAL
1997 05 07.14	B	0.4		SC	0.0	E		1			18	15	HAL
1997 05 14.14	B	0.5		SC	0.0	E		1					HAL
1997 05 22.13	I	1	:	SC	5.0	B		10					HAL
1997 06 05.34	S	2.0		SC	0.0	E		1					HAL
1997 06 09.35	S	1.9		SC	0.0	E		1					HAL
1997 06 18.34	S	2.5:		SC	5.0	B		10					HAL
1997 06 22.36	S	2.5:		SC	5.0	B		10					HAL
1997 08 31.49	S	4.8:		SC	20	L	6	49	2	7/			HAL
1997 09 02.48	M	4.8		SC	20	L	6	49	5	5/			HAL
1997 09 07.48	S	4.7:		SC	7.0	B		10	5	6			HAL
1997 09 27.48	S	6.0:		SC	7.0	B		10	6	6	20	m 300	HAL
1997 09 28.49	S	6.0		SC	7.0	B		10	6				HAL
1997 10 04.49	S	6.1:		SC	7.0	B		10	7	6/	30	m 300	HAL
1997 10 09.49	S	6.0:		SC	7.0	B		10	6	6/	25	m 290	HAL
1997 10 13.49	S	6.0:		SC	7.0	B		10	6	6	15	m 290	HAL
1997 10 31.49	S	6.5:		SC	7.0	B		10	6	6			HAL
1997 11 02.50	S	6.5:		SC	7.0	B		10	6	5/			HAL
1997 11 18.45	S	6.4:		SC	30	T	10	117	2	3/			HAL
1998 02 22.98	S	8.6:		NP	7.0	B		10	9	3/			HAL
1998 02 26.01	S	8.6		NP	7.0	B		10	9	4/			HAL
1998 02 27.98	S	8.6:		NP	7.0	B		10					HAL
1998 05 23.39	M	9.3		AC	7.0	B		10	3	7/			HAL
1998 05 24.43	M	9.4		AC	7.0	B		10	3	5/			HAL
1998 05 26.40	M	9.3		AC	7.0	B		10	3	6			HAL
1998 11 15.45	S	11.0		TT	31.7	L	5	64	0.4	1			JON
1998 11 17.60	S	11.4		TT	31.7	L	5	64	1.0	1			JON
1999 03 13.41	S	11.2		VN	25.4	L	6	61	1.2	4			SEA01
1999 04 15.36	S	11.7		VN	25.4	L	6	61	1.3	4			SEA01
1999 05 03.36	S	11.6		VN	25.4	L	6	61	1.2	4			SEA01
1999 05 04.40	S	11.3		GA	10.0	B		25					SEA
1999 05 07.39	S	11.8		VN	25.4	L	6	61	1.1	3			SEA01
1999 05 08.37	M	12.2		HS	25	L	5	40	1.1	5			RAE
1999 05 08.49	S	11.5		VN	25.4	L	6	61	1.3	3			SEA01
1999 05 10.35	M	12.1		HS	25	L	5	40	1.0	4/			RAE
1999 05 13.34	S	11.6		VN	25.4	L	6	61	1.3	4			SEA01
1999 05 14.34	S	11.7		VN	25.4	L	6	61	1.2	3			SEA01
1999 05 15.36	S	11.8		VN	25.4	L	6	61	1.0	2			SEA01
1999 05 15.37	M	11.7		HS	25.4	L	6	39	1	5			DRE01
1999 05 18.38	S	11.8		VN	25.4	L	6	61	1.2	3			SEA01
1999 05 18.47	S	12.3:		HS	20	L	7	158	0.5	4			MAT08
1999 05 19.31	S	11.7		HS	25	L	5	40	0.9	4			RAE
1999 05 19.44	S	11.2		GA	10.0	B		25					SEA

Comet C/1995 01 (Hale-Bopp) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 22.32		S	12.0	TT	25	L	5	40	0.7	3			RAE
1999 06 02.43		S	12.4	HS	20	L	7	158	1	3			MAT08
1999 06 05.31		S	12.3	HS	25	L	5	75	1	2			RAE
1999 06 06.31		S	12.1	HS	25	L	5	75	1	2			RAE
1999 06 07.30		S	12.1	HS	25	L	5	75	1	4			RAE
1999 06 15.40		S	11.5	GA	10.0	B		25					SEA
1999 06 19.75		S	12.4	HS	25	L	5	40	1	3			RAE
1999 07 09.41		S	12.4	HS	20	L	7	45	1	4			MAT08
1999 07 23.85		S	12.4	VN	41	L	4	90	1.6	3			PEA
1999 07 24.88		S	12.4	VN	41	L	4	90	1.8	3			PEA
1999 08 01.31		M	12.4	HS	25	L	5	75	1.5	4			RAE

Comet C/1996 J1 (Evans-Drinkwater)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 05 13.44		I	[11 :		20	L	6	122					HAL
1997 06 30.43		I	[13.5:		41	L	4	183					HAL
1997 07 11.44		I	[14.0:		41	L	4	183					HAL

Comet C/1997 BA6 (Spacewatch)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 05.28		S	13.4:	HS	25.6	L	5	169	1.0	5			BIV
1999 04 08.27		S	13.6:	HS	25.6	L	5	169	0.8	5			BIV
1999 05 09.26		S	13.2:	HS	25.6	L	5	169	0.8	5			BIV
1999 05 17.48		S	13.4	VN	41	L	4	200	0.8	3			PEA
1999 05 18.48		S	13.4:	HS	20	L	7	158	0.5	4			MAT08
1999 06 02.42		S	13.2	HS	20	L	7	158	0.8	3			MAT08
1999 07 09.42		S	13.0:	HS	20	L	7	158	0.5	3			MAT08

Comet C/1997 D1 (Mueller)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 03 04.27		S	13.4	AC	41	L	4	72	1				HAL
1997 03 31.27		S	13.5:	AC	41	L	4	183	1				HAL
1997 04 07.28		S	13.5	AC	41	L	4	183	1				HAL
1997 05 08.24		S	13.7	NP	41	L	4	183	1				HAL
1997 09 29.48		S	13.0	WA	41	L	4	183	2	3			HAL
1997 10 09.48		S	12.9	WA	41	L	4	183	2.5	3/			HAL
1997 10 31.47		S	12.8	NP	41	L	4	72	2	3/			HAL
1997 11 24.28		S	12.0	WA	41	L	4	183	2.5	4			HAL
1997 12 04.29		M	12.4	WA	41	L	4	72	2	3			HAL
1997 12 29.23		S	13.2	NP	41	L	4	183	1.5	2/			HAL

Comet C/1997 H2 (SOHO)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 05 14.13		I	[7 :		20	L	6	49					HAL

Comet C/1997 J1 (Mueller)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 05 07.27		S	12.6	NP	41	L	4	72	1	4/			HAL
1997 05 13.30		M	12.7	NP	41	L	4	72	1	4			HAL
1997 06 02.19		S	12.6	NP	41	L	4	72	1				HAL

Comet C/1997 J2 (Meunier-Dupouy)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 05 13.30		M	12.6	NP	41	L	4	72	1				HAL
1997 06 02.27		S	12.6	NP	41	L	4	72	1				HAL
1997 06 29.25		S	12.4	NP	41	L	4	72	1				HAL
1997 07 03.24		S	12.4	NP	41	L	4	72	1	3/			HAL
1997 07 11.24		S	12.4	NP	41	L	4	72	1	3/			HAL
1997 07 24.19		M	12.2	NP	41	L	4	72	1	4/			HAL

Comet C/1997 J2 (Meunier-Dupouy) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 08 02.23		S	12.2	NP	41	L	4	72	1	4/			HAL
1997 08 11.20		S	12.2	NP	41	L	4	72	1	4/			HAL
1997 08 26.13		S	12.1	NP	41	L	4	72	1.5	4			HAL
1997 09 05.16		M	12.0	NP	41	L	4	72	1.5	4/			HAL
1997 09 23.12		S	11.7	NP	41	L	4	72	2	6/			HAL
1997 10 03.13		S	11.6	NP	41	L	4	72	2	5			HAL
1997 10 20.12		M	11.7	NP	41	L	4	72	2	6			HAL
1997 10 30.12		M	11.7	NP	41	L	4	72	2	5/			HAL
1997 11 06.09		M	11.7	NP	41	L	4	72	2	4/			HAL
1997 11 17.07		S	11.8	NP	41	L	4	72	2	4/			HAL
1997 11 26.08		M	11.8	NP	41	L	4	72	2	5/			HAL
1998 03 04.52		S	11.8:	NP	41	L	4	72	1.5				HAL
1998 03 10.51		S	11.9:	NP	41	L	4	144	1.5				HAL
1998 03 28.49		M	12.1	NP	41	L	4	72	2	4/			HAL
1998 04 04.49		S	12.0	NP	41	L	4	144	2				HAL
1998 04 23.45		M	12.1	NP	41	L	4	72	2	4/			HAL
1998 05 02.46		M	12.2	NP	41	L	4	72	2	5			HAL
1998 05 29.45		M	12.1	NP	41	L	4	72	2				HAL
1998 06 03.43		M	12.0	NP	41	L	4	72	2	5/			HAL
1998 06 28.39		M	12.0	NP	41	L	4	72	2	5			HAL

Comet C/1997 N1 (Tabur)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 09 12.11		I	8.7:	NP	20	L	6	49	5				HAL
1997 09 20.10		I	11 :		20	L	6	49					HAL

Comet C/1997 01 (Tilbrook)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 07 24.15		!	S 10.6:	NP	20	L	6	49	2	3			HAL
1997 08 02.15		!	S 10.2	NP	20	L	6	49	3	3			HAL
1997 08 29.14		!	S 11.2:	NP	20	L	6	49	2	2			HAL

Comet C/1997 T1 (Utsunomiya)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 10 06.23		M	10.0	NP	41	L	4	72	3				HAL
1997 10 26.22		M	10.1	NP	41	L	4	72	3.5				HAL
1997 11 03.14		M	10.3	AC	41	L	4	72	3.5				HAL
1997 11 18.08		M	10.2	AC	41	L	4	72	4				HAL
1997 11 25.09		M	10.4	NP	41	L	4	72	3				HAL

Comet C/1998 H1 (Stonehouse)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 04 26.26		M	10.7	NP	41	L	4	72	4.5				HAL
1998 05 01.28		M	10.8	NP	41	L	4	72	4				HAL
1998 05 16.22		S	11.6	NP	41	L	4	72	3				HAL
1998 05 30.25		S	12.3	NP	41	L	4	72	2	1/			HAL

Comet C/1998 J1 (SOHO)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 06.77		I	[-2 :		41	L	4	72					HAL
1998 05 08.09		I	[-1 :		20	L	6	49					HAL
1998 05 09.10		I	[0 :		20	L	6	49					HAL
1998 05 10.10		I	[2 :		10.8	L	4	17					HAL
1998 05 11.11		I	[2 :		20	L	6	49					HAL
1998 05 12.11		I	[2.5:		20	L	6	49					HAL
1998 05 13.11		I	[3 :		20	L	4	49					HAL
1998 05 14.12		I	[3 :		30	T	10	117					HAL
1998 05 15.12		I	[3 :		30	T	10	117					HAL
1998 05 16.12		I	[3 :		30	T	10	117					HAL
1998 05 23.35		M	4.4:	SC	7.0	B		10			7	133	HAL

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 25.36		B	4.4	SC	0.0	E		1					HAL
1998 05 26.36		B	4.4	SC	0.0	E		1					HAL

Comet C/1998 K1 (Mueller)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 20.25		I	[13.5:		41	L	4	183					HAL
1998 05 30.21		I	[13.5:		41	L	4	183					HAL

Comet C/1998 K2 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 29.25		S	13.3	NP	41	L	4	183	0.5	7/			HAL
1998 06 03.37	!	S	13.3	NP	41	L	4	72	0.5	6			HAL
1998 06 15.20	!	S	13.0	NP	41	L	4	72	1	6/			HAL
1998 06 28.25	!	S	12.4	NP	41	L	4	183	1	6			HAL

Comet C/1998 K5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 31.33		S	14.6	NP	41	L	4	183	< 0.1	9			HAL
1998 06 03.41		S	14.4	NP	41	L	4	183	< 0.1	9			HAL
1998 06 18.27		B	13.2	NP	41	L	4	183	< 0.1	9			HAL
1998 06 28.31		B	13.2	NP	41	L	4	183	< 0.1	9			HAL
1998 10 27.12		S	[14.0	HS	35	L		80					SZA

Comet C/1998 M1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 06 28.23		S	[14.3	NP	41	L	4	183	& 0.5				HAL
1998 06 29.23		I	[14.0:		41	L	4	183					HAL
1999 05 07.75	1	C	[15.7	TJ	18.0	L	6	a 60					YOS04
1999 05 13.78		C	17.5	GA	60.0	Y	6	a240	0.35		0.7m	238	NAK01
1999 05 20.78		C	17.7	GA	60.0	Y	6	a240	0.4		0.6m	231	NAK01

Comet C/1998 M2 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 06 28.29		S	13.4	NP	41	L	4	183	1	3/			HAL
1998 06 29.22		S	13.4:	NP	41	L	4	183	1	3/			HAL
1999 05 07.75	1	C	[15.8	TJ	18.0	L	6	a 60					YOS04

Comet C/1998 M3 (Larsen)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 14.71		C	18.7	GA	60.0	Y	6	a240	0.3			180	NAK01

Comet C/1998 M4 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 06 28.36		I	[14.0:		41	L	4	183					HAL

Comet C/1998 M5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 08 17.92		S	12.1	HS	27	L	6	83	1	d6			TOT03
1998 08 26.90		S	11.9	HS	27	L	6	83	1.2	4			TOT03
1998 10 09.80		S	11.0	HS	27	L	6	83	1.5	s5			TOT03
1998 10 13.87		S	11.2	HS	27	L	6	83	2.0	3			TOT03
1998 10 21.79		S	11.6	HS	27	L	6	83	1.5	2			TOT03
1998 10 22.17		S	10.7	S	20	T	10	100	3.1	2			PRY
1998 10 23.14		S	10.8	S	20	T	10	100	2.4	1			PRY
1998 11 12.73		S	9.8:	S	8	R	7	35	2	3/			KWI
1998 11 13.74	x	S	9.7:	S	8	R	7	35	2	3			KWI
1998 11 20.76		S	10.5	HS	27	L	6	83	2.5	d3			TOT03

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 12 13.74		S	10.8	HS	27	L	6	83	3	2			TOT03
1999 01 17.80	x	S	10.0	TT	35	M	10	90	4	s4/			PLE01
1999 01 21.71	x	S	9.8:	TT	6.0	B		20	4.3	2			DRA02
1999 02 05.75		S	9.3:	S	6.0	R	12	40	& 1.2	1			FAJ
1999 02 10.90	x	S	9.5	TT	35	M	10	90	3	s4/			PLE01
1999 02 13.77		B	9.7:	S	6.0	R	12	40	& 1.8	1			FAJ
1999 02 17.75		[9.5	S		6.0	R	12	40	! 2				FAJ
1999 02 18.75		[9.5	S		6.0	R	12	40	! 2				FAJ
1999 03 04.77	x	S	9.6:	TT	8	R	7	35	5	2/			KWI
1999 03 04.80	x!	B	10.5	TJ	35	C	16	210	& 1	d2			CHR
1999 03 06.76	x!	B	10.7	TJ	35	C	16	210	& 1	d2			CHR
1999 03 06.89	x	[10 :	AA		11.0	L	7						SAD
1999 03 07.88	x	[10 :	AA		11.0	L	7						SAD
1999 03 08.86	x	S	9.7:	TT	8	R	7	35	5	3			KWI
1999 03 08.86	x	S	10.8	TT	25.0	L	5	74	1.8	d3			SPE01
1999 03 08.87	x	S	10.5	TT	35	M	10	90	1.8	s3			DRA02
1999 03 08.90		B	9.9	TI	11.4	L	4	75	2.1	3	4.5m	188	KAC01
1999 03 08.91		B	9.5:	TI	6	R	6	25	3.5	4			KOU
1999 03 12.83	x	S	11.0	TT	25.0	L	5	74	2.1	d2			SPE01
1999 03 12.99	x	B	8.8	TT	15	M	10	60	12	s4/			PLE01
1999 03 13.80	x	S	11.0	TT	25.0	L	5	74	1.5	d2			SPE01
1999 03 13.89	x	B	8.9	TT	15	M	10	60	9	s4			PLE01
1999 03 13.90		B	9.7	TI	11.4	L	4	75	3.2	3/			KOU
1999 03 13.91		B	9.4	TI	11.4	L	4	75	2.8	4			KAC01
1999 03 14.88	x	S	9.6:	TT	8	R	7	35	4	3			KWI
1999 03 16.80		S	9.6:	S	6.0	R	12	40	& 2.5	s2/			FAJ
1999 03 16.94	x	S	9.2	TT	35	M	10	90	4	s4			PLE01
1999 03 17.36		S	9.8	TJ	25.6	L	5	42	5.0	4			BIV
1999 03 17.78		S	9.8:	S	6.0	R	13	92	& 2.5	s1/			FAJ
1999 03 18.78	x	S	9.7:	TT	8	R	7	35	4	3/			KWI
1999 03 18.78	x	S	10.4	TT	25	L	5	66	& 1	2			KID01
1999 03 18.82	x	S	10.2	TT	11.0	L	7	54	& 6	4			SAD
1999 03 18.83	x!	B	10.8	TJ	35	C	16	210	& 1	d2			CHR
1999 03 18.84	x	S	11.2	TT	25.0	L	5	74	2.0	d2			SPE01
1999 03 19.78	x	S	10.7	TT	25	L	5	66	& 1	2			KID01
1999 03 19.82	x	S	9.9:	TT	8	R	7	35	4	3/			KWI
1999 03 19.92	x	S	11.1:	TT	9	L	10	70	& 2	d2/			JAR01
1999 03 23.29		S	10.0	TJ	25.6	L	5	42	4.0	3			BIV
1999 03 23.51		S	10.0	TJ	25.6	L	5	42	5.0	3			BIV
1999 03 24.91	x!	B	10.8	TJ	35	C	16	210	& 1	d2			CHR
1999 03 25.51		S	9.9	TJ	25.6	L	5	42	3.5	4			BIV
1999 03 26.08	x	S	9.3	TT	10.0	B		25	7	1/			DRA02
1999 03 26.10	x	M	11.4	TT	35	M	10	90	2.5	s3/			DRA02
1999 04 03.80	x	S	10.6	TT	35	M	10	90	3.9	s2/			DRA02
1999 04 04.80	x!	B	11.5	TJ	35	C	16	210		d2			CHR
1999 04 04.88	x	S	10.6	TT	35	M	10	90	2.4	s3			DRA02
1999 04 05.34		S	10.4	TJ	25.6	L	5	42	5.0	4			BIV
1999 04 08.33		S	10.6	TJ	25.6	L	5	42	4.5	3			BIV
1999 04 08.80		M	9.5	TT	10	B	4	25	6.5	3			LEH
1999 04 09.78	x!	B	11.5	TJ	35	C	16	210	& 1	d2			CHR
1999 04 09.89	x	S	11.3:	TT	9	L	10	120	& 2	d2			JAR01
1999 04 09.95	x	S	10.8	TT	35	M	10	90	3.8	s2/			DRA02
1999 04 10.78	x!	B	11.7	TJ	35	C	16	210	& 1	d2			CHR
1999 04 12.91	x	S	10.2	TT	35	M	10	90	3.5	4			PLE01
1999 04 14.82	x!	B	11.7	TJ	35	C	16	210	& 1	d2			CHR
1999 04 14.85	x	S	10.1:	TT	8	R	7	35	3	4			KWI
1999 04 14.89	x	S	10.8:	HS	35	M	10	90	2.5	s3			DRA02
1999 04 15.78	x!	B	11.8	TJ	35	C	16	210		d2			CHR
1999 04 18.83	x	S	10.6	TJ	25.4	L	5	65	3.0	s4			MEY
1999 04 18.88		M	10.4	TT	10	B	4	25	3.8	3			LEH
1999 04 18.89	x	S	11.3	TT	15.0	L	5	75	1.2	d1/			SPE01
1999 04 19.88		M	10.4	TT	10	B	4	25	3.7	3			LEH
1999 04 19.96		S	10.7	TT	30.5	T	10	117	& 2.5	3			COM
1999 04 20.27		S	10.7	TJ	25.6	L	5	42	3.5	4			BIV
1999 04 20.89		M	10.5	TT	10	B	4	25	2.9	3			LEH

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 01.48		C	12.0	TJ	16.0	H	3	a 30	2.2				YOS04
1999 05 02.90		S	10.7	TJ	20	R	14	140	0.8	3			SHA02
1999 05 03.83		M	10.8	TT	10	B	4	25	2.5	3			LEH
1999 05 03.88	x	S	11.0	TJ	25.4	L	5	65	3.5	3/			MEY
1999 05 03.90		S	11.4	TT	30.5	T	10	117	& 2.5	1			COM
1999 05 03.90	x	S	11.1	TT	25.4	J	6	72	3.0	2/			BOU
1999 05 04.91		B	11.7	HS	40.6	T	10	65	1.5	3			CHE03
1999 05 05.84		M	10.6	TT	35	L	5	92	3.0	3/			HOR02
1999 05 05.85	x	S	11.7	HS	35	M	10	90	2.8	s2			DRA02
1999 05 05.90		M	11.0	TI	10	B	4	25	2.4	3			LEH
1999 05 05.92		B	11.8	HS	40.6	T	10	65	1.6	3			CHE03
1999 05 06.47		C	11.9	TJ	16.0	H	3	a 30	2.5		4.1m	36	YOS04
1999 05 06.51		C	11.7:	GA	60.0	Y	6	a 60	2.4		> 5.3m	22	NAK01
1999 05 06.93	x	S	11.9:	TT	6.6	B		20	2	4/			PLE01
1999 05 07.48		C	12.5	TJ	18.0	L	6	a 60	1.0				YOS04
1999 05 07.50	x	S	11.3	HS	25.4	L	4	113	1.7	3			YOS02
1999 05 07.89		S	11.2	AC	25.4	L	5	65	3.1	3			MEY
1999 05 09.30		S	11.2	TJ	25.6	L	5	42	3.0	4			BIV
1999 05 09.84		M	10.5	TT	35	L	5	92	3.2	3			HOR02
1999 05 09.85		M	11.0	TI	10	B	4	25	2.1	3			LEH
1999 05 09.86		S	11.4	HS	44.0	L	5	63	1.0	2			HAS02
1999 05 09.92		S	11.4	AC	25.4	L	5	65	3.4	2/			MEY
1999 05 09.94	x	S	11.3	TT	25.4	J	6	72	2.8	2			BOU
1999 05 10.90		S	11.7	VB	30	R	20	105	1.4	2			SHA02
1999 05 10.91	x	S	11.3	TT	25.4	J	6	72	2.6	2			BOU
1999 05 11.30		S	11.3	HS	25.6	L	5	42	2.5	3			BIV
1999 05 11.90		S	11.5	TT	30.5	T	10	117	& 2	0/			COM
1999 05 12.51		C	13.3	TJ	18.0	L	6	a 60	0.65				YOS04
1999 05 12.92		S	11.8	HS	40.6	T	10	65	1.8	2			CHE03
1999 05 12.93		B	12.1	HS	40.6	T	10	65		2			CHE03
1999 05 15.32		S	11.7	HS	25.6	L	5	42	2.0	2			BIV
1999 05 15.85		B	11.1:	TI	5.6	R	14	40					KAC01
1999 05 15.85		M	11.1	TT	35	L	5	92	2.5	3			HOR02
1999 05 15.94	x	S	11.5	TT	40.0	L	5	95	& 2.0	2			BOU
1999 05 15.98		M	11.5	NP	44.5	L	5	100	1.5	4			MAR02
1999 05 16.86		M	11.0	TT	35	L	5	92	2.6	3			HOR02
1999 05 16.86		S	10.9	AC	25.0	L	6	61	2.0	3/			RES
1999 05 16.89		M	11.0	TI	42	L	5	66	2.1	3/			LEH
1999 05 17.86		S	11.1	AC	25.0	L	6	61	1.7	3			RES
1999 05 17.87		S	11.1	TT	35	L	5	92	2.4	2/			HOR02
1999 05 17.88		S	11.5	AC	25.4	L	5	65	2.8	3			MEY
1999 05 17.90		M	11.2	TI	42	L	5	66	2.1	3			LEH
1999 05 17.92		S	11.8	TT	30.5	T	10	117	& 2.5	0/			COM
1999 05 17.92		S	12.1	VB	30	R	20	185	0.9	2			SHA02
1999 05 17.95	x	S	11.6	TT	25.4	J	6	72	2.5	1/			BOU
1999 05 18.89		M	11.4	TI	42	L	5	81	2.0	3			LEH
1999 05 18.92		S	11.0	AC	25.0	L	6	61	1.8	4	0.08	135	RES
1999 05 18.93		S	11.4	AC	25.4	L	5	65	3.0	3			MEY
1999 05 18.94	x	S	11.6	TT	25.4	J	6	72	2.3	1/			BOU
1999 05 19.37		S	11.9	HS	25.6	L	5	42	2.0	3			BIV
1999 05 19.88		M	11.7	TI	42	L	5	81	1.9	3			LEH
1999 05 20.48		C	13.4	TJ	18.0	L	6	a 30	0.8				YOS04
1999 05 20.49		C	12.4	GA	60.0	Y	6	a120	1.9				NAK01
1999 05 20.97		S	11.9:	HS	30	R	20	185	0.9	3			SHA02
1999 05 24.88		S	11.7	HS	44.0	L	5	156	0.8	3			HAS02
1999 06 03.89		M	12.2	HS	42	L	5	81	1.8	3			LEH
1999 06 05.87		S	11.6	TI	35	L	5	92	1.9	2/			HOR02
1999 06 12.29		S	12.3	HS	25.6	L	5	84	1.5	3			BIV
1999 06 13.30		S	12.5	HS	25.6	L	5	84	1.3	2			BIV
1999 06 14.30		S	12.9:	HS	25.6	L	5	84	1	3			BIV
1999 06 17.30		S	12.5	HS	25.6	L	5	84	1.5	2			BIV
1999 07 02.28		S	12.7	HS	25.6	L	5	84	1.3	1			BIV
1999 07 03.30		S	13.1	HS	25.6	L	5	84	1	2			BIV
1999 07 04.28		S	12.8	HS	25.6	L	5	84	1.2	2			BIV

Comet C/1998 P1 (Williams)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 09 19.25		S	8.4	S	20	T	10	63	4.5	6			PRY
1998 12 22.08		S	10.2	HS	27	L	6	83	3	2/	2.0m	130	TOTO3
1999 01 21.95	x	S	10.7	TT	35	M	10	90	4.6	2			DRA02
1999 01 21.98	x	S	10.0	TT	35	M	10	90	4	3			PLE01
1999 03 12.80	x	S	11.2	TT	15	M	10	60	5	3/			PLE01
1999 03 17.32		S	12.1	HS	25.6	L	5	42	2.5	2			BIV
1999 03 23.43		S	13.1:	HS	25.6	L	5	84	1.5	1			BIV
1999 04 05.26		S	12.6	HS	25.6	L	5	84	1.5	1			BIV
1999 04 08.28		S	12.8	HS	25.6	L	5	84	1.5	2			BIV
1999 04 18.86		M	12.9	HS	42	L	5	162	1.5	3/			LEH
1999 04 19.86		M	12.9	HS	42	L	5	162	1.4	3			LEH
1999 04 20.32		S	13.3	HS	25.6	L	5	169	1.5	1			BIV
1999 04 20.86		M	12.9	HS	42	L	5	162	1.5	3			LEH
1999 05 01.49	1	C	[16.0	TJ	16.0	H	3	a 60					YOS04
1999 05 05.85		M	13.0	HS	42	L	5	162	1.6	3			LEH
1999 05 05.86		S	13.5	HS	35	L	5	237	1.2	1/			HOR02
1999 05 06.48		C	15.9:	GA	60.0	Y	6	a240	0.75	0		109	NAK01
1999 05 09.84		S	13.4	HS	35	L	5	237	1.1	2			HOR02
1999 05 09.86		S	13.0	HS	44.0	L	5	156	0.3	4			HAS02
1999 05 09.87		B	13.2	HS	42	L	5	162	1.5	3/			LEH
1999 05 12.50	1	C	[15.5	TJ	18.0	L	6	a 60					YOS04
1999 05 15.88		S	14.0:	HS	35	L	5	237	0.7	1			HOR02
1999 05 15.93		S	13.6	HS	40.0	L	5	154	0.7	1			BOU
1999 05 16.87		S	12.9	AC	25.0	L	6	121	1.0	2			RES
1999 05 16.87		S	13.7	HS	35	L	5	237	1.1	1/			HOR02
1999 05 17.86		B	13.8	HS	42	L	5	162	0.9	3/			LEH
1999 05 17.86		S	13.2	AC	25.0	L	6	121	0.9	3			RES
1999 05 18.87		S	13.1	AC	25.0	L	6	121	1.0	2			RES

Comet C/1998 T1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 07.77		C	13.2	TJ	18.0	L	6	a 60	0.55	2			YOS04
1999 05 15.78		S	13.0:	HS	20	L	7	158	2	1			MAT08
1999 05 18.77		S	12.8	GA	25.4	L	4	71	2				SEA
1999 05 19.60		S	11.8	HS	25.6	L	5	84	1.8	2			BIV
1999 05 19.61		S	11.5	HS	25.6	L	5	42	2.5	2			BIV
1999 05 20.75		C	12.1	TJ	16.0	H	3	a 30	0.8	2			YOS04
1999 05 21.89		S	12.0	VN	41	L	4	90	2.4	2			PEA
1999 05 22.73		S	[11.4	HS	25	L	5	75					RAE
1999 05 22.90		S	11.9	VN	41	L	4	90	2.5	2			PEA
1999 05 23.88		S	11.9	VN	41	L	4	90	2.1	2			PEA
1999 06 08.67		S	10.7	TI	20	L	7	45	4	3			MAT08
1999 06 09.72		S	10.3	TT	25	L	5	40	3.5	3			RAE
1999 06 10.65		S	10.2	TT	25	L	5	40	3.3	3			RAE
1999 06 10.69		S	10.3	TI	20	L	7	45	6	4			MAT08
1999 06 12.55		S	9.8	TJ	25.6	L	5	42	5	2			BIV
1999 06 13.53		S	9.4	TJ	25.6	L	5	42	6	3			BIV
1999 06 13.60		S	10.2	AA	10.0	B		25	6	1			SEA
1999 06 14.62		S	9.7:	TJ	25.6	L	5	42	6	3			BIV
1999 06 14.72		C	13.1	TJ	18.0	L	6	a 60	0.9				YOS04
1999 06 16.56		S	9.3	AA	10.0	B		25					SEA
1999 06 16.63		S	9.9	TI	20	L	7	45	6	4			MAT08
1999 06 17.55		S	9.8	TJ	25.6	L	5	42	6.5	2			BIV
1999 06 17.68		S	9.6	TT	11	L	4	30	4	3/			RAE
1999 06 18.60		S	8.8:	AA	5.0	B		10	10				SEA
1999 06 18.70		S	9.8	TI	20	L	7	45	6	4			MAT08
1999 06 18.74		S	9.3	TT	11	L	4	30	5	4			RAE
1999 06 19.54		S	9.9	TJ	25.6	L	5	42	6.0	2			BIV
1999 06 19.70		S	9.5	TI	20	L	7	45	6	4			MAT08
1999 06 19.73		M	9.3	TT	11	L	4	16	8	3/			RAE
1999 06 20.51		S	9.3	AA	10.0	B		25					SEA
1999 06 20.58		S	10.1	TJ	25.6	L	5	42	6.0	3			BIV
1999 06 21.74		M	8.9:	TT	11	L	4	16	10	3/			RAE
1999 06 23.74		M	8.6	TT	11	L	4	16	8	4			RAE

Comet C/1998 T1 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 23.84		S	10.0	AA	20	L	4	45	5.5	2/			PEA
1999 06 25.58		S	8.8	TJ	5.0	B		7	12	2			BIV
1999 07 02.96	x	S	8.9:	TJ	23.0	L	5	67	3				DES01
1999 07 03.34		S	9.0	TJ	25.6	L	5	42	6	3			BIV
1999 07 03.35		S	8.3	TJ	5.0	B		7	11	3			BIV
1999 07 04.28		S	8.6	TT	5.0	B		10	15	3			RAE
1999 07 04.37		S	9.0	TJ	25.6	L	5	42	11	3			BIV
1999 07 04.38		S	8.2	TJ	5.0	B		7	12	1			BIV
1999 07 04.42		S	8.8	AA	10.0	B		25		3			SEA
1999 07 04.50		S	9.4	TI	20	L	7	45	5	5			MAT08
1999 07 05.32		M	8.4	TT	11	L	4	16	13	3/			RAE
1999 07 05.48		S	9.2	TI	20	L	7	45	5	5			MAT08
1999 07 07.57	xs	S	8.9	TT	25.4	L	4	46	3	1			YOS02
1999 07 08.52		S	9.2	TI	20	L	7	45	5	5			MAT08
1999 07 09.39		S	8.4	TT	11	L	4	16	8	2			RAE
1999 07 09.39		S	8.8	TT	11	L	4	30	5	2			RAE
1999 07 09.50		S	9.5	TI	20	L	7	45	4	4			MAT08
1999 07 10.31		S	9.5	TJ	25.6	L	5	42	7	3			BIV
1999 07 10.32		S	9.3	TJ	5.0	B		7	9	2			BIV
1999 07 10.34		S	8.3	TT	11	L	4	16	9	2			RAE
1999 07 10.89	x	S	8.6	TJ	23.0	L	5	67	4	4			DES01
1999 07 11.28		S	9.7	TJ	25.6	L	5	42	8	3			BIV
1999 07 11.90	x	S	8.5	TJ	8.0	B		11	5	3			DES01
1999 07 12.42		S	9.9	TI	20	L	7	45	4	4			MAT08
1999 07 12.93	x	S	8.6	TJ	23.0	L	5	67	4	4			DES01
1999 07 13.51		S	8.8	TT	11	L	4	30	5	4			RAE
1999 07 13.54		S	8.5	TT	5.0	B		10	5	4/			RAE
1999 07 13.62		S	10.3	TI	20	L	7	45	4	4			MAT08
1999 07 14.28		S	9.9	TJ	25.6	L	5	42	5	3			BIV
1999 07 14.33		M	9.6	TT	25	L	5	40	3.8	4			RAE
1999 07 14.35		S	9.2:	TT	11	L	4	30	4	3/			RAE
1999 07 15.52		S	10.4	TI	20	L	7	45	4	4			MAT08
1999 07 15.93	x	S	8.5	TJ	23.0	L	5	67	3	4			SOU01
1999 07 15.93	x	S	8.6	TJ	23.0	L	5	67	4	3/			DES01
1999 07 16.34		S	10.2	TJ	25.6	L	5	42	3.5	2			BIV
1999 07 16.93	x	S	8.7	TJ	23.0	L	5	67	5	3/			DES01
1999 07 17.29		S	10.1	TJ	25.6	L	5	42	5	3			BIV
1999 07 17.94	x	S	8.8	TJ	23.0	L	5	67	4	4			DES01
1999 07 18.30		S	10.2	TJ	25.6	L	5	42	5	3			BIV
1999 07 18.60		S	10.3	TT	25.4	L	6	39	4	2			DRE01
1999 07 21.60		S	9.3	VN	20	L	4	45	5.5	1			PEA
1999 07 24.48		C	11.9	TJ	16.0	H	3	a 40	1.7				YOS04
1999 07 30.47		C	13.5	TJ	18.0	L	6	a 30	0.55				YOS04
1999 07 31.33		S	10.6	TT	25	L	5	40	2.5	2			RAE
1999 07 31.48		S	9.4	TJ	25.4	T	6	116	3	3			YOS04
1999 08 01.33		M	10.4	TT	25	L	5	40	3.5	3/			RAE

Comet C/1998 U5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 11.87		S	9.4	HS	27	L	6	83	3.5	6/			TOT03
1998 11 15.95		S	8.7	HS	27	L	6	83	4.5	5			TOT03
1998 11 17.98		S	8.4	AA	5.0	B		10	7	2/			SAN07
1998 11 18.82		S	7.8	AA	5.0	B		10	12	1/			SAN07
1998 11 19.14		S	8.8	S	20	T	10	100	3.1	4			PRY
1998 11 20.75		S	7.5	AA	5.0	B		10	13	1			SAN07
1998 12 13.77		S	9.3	HS	27	L	6	83	4.5	2/			TOT03
1999 04 30.77		C	15.4	TJ	16.0	H	3	a 30	0.45				YOS04
1999 05 07.72		C	16.1	TJ	18.0	L	6	a 60	0.35				YOS04
1999 05 16.03		S	13.8	HS	40.0	L	5	200	0.5	4/			BOU
1999 05 16.96		S	13.3:	AC	25.0	L	6	121	0.8	2			RES
1999 05 17.01		[14.0	HS	35	L	5		237	1				HOR02
1999 05 17.01		B	13.5	HS	42	L	5	162	1.2	3			LEH
1999 05 18.98		S	13.6	AC	25.0	L	6	121	0.6	2			RES
1999 05 18.99		B	13.7	HS	42	L	5	162	1.2	3			LEH

Comet C/1998 U5 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 20.75	1	C	[15.0	TJ	16.0	H	3	a 30					YOS04
1999 05 22.05		B	14.0	HS	42	L	5	162	0.9	4			LEH
1999 05 24.90		S	[13.5	HS	44.0	L	5	156					HAS02
1999 06 04.68		C	17.0:	TJ	18.0	L	6	a 60	0.2				YOS04
1999 06 19.94		S	[14.0	HS	44.0	L	5	226					HAS02
1999 07 08.62		C	18.8	GA	60.0	Y	6	a240	0.25				NAK01

Comet C/1999 F1 (Catalina)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 06.56		C	18.7:	GA	60.0	Y	6	a240		9			NAK01
1999 05 07.55	1	C	[16.8	TJ	18.0	L	6	a 60					YOS04
1999 05 13.50		C	18.5	GA	60.0	Y	6	a240	0.2	8			NAK01
1999 07 07.49	a	C	18.7:	GA	60.0	Y	6	a240	0.2				NAK01

Comet C/1999 F2 (Dalcanton)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 09.56		C	15.8	GA	60.0	Y	6	a120	0.55				NAK01
1999 06 10.58		C	15.7	TJ	18.0	L	6	a 60	0.5		3.2m	227	YOS04
1999 06 12.52		C	15.7	TJ	18.0	L	6	a 60	0.6				YOS04
1999 06 14.59		C	15.4	TJ	18.0	L	6	a 60	0.55				YOS04
1999 07 07.58		C	15.9	GA	60.0	Y	6	a120	0.5		3.0m	223	NAK01
1999 07 17.94		S	[15.0	HS	44.0	L	5	156					HAS02

Comet C/1999 H1 (Lee)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 18.03		S	8.5	S	7.0	B		10	6	3			DEA
1999 04 18.34		S	9.9	TT	31.7	L	5	64	& 1	3			JON
1999 04 19.17		S	8.7	S	7.0	B		10	4	2			DEA
1999 04 19.41		S	9.9	TT	31.7	L	5	64	2	3			JON
1999 04 19.74		S	9.8	TT	31.7	L	5	64	2	3			JON
1999 04 20.16		S	9.1	AA	5.0	B		7	2	3			GAR04
1999 04 20.41		S	9.7	TT	31.7	L	5	64	& 2	4			JON
1999 04 21.11		S	8.5	S	7.0	B		10	8	3			DEA
1999 04 21.12		S	9.0	AA	5.0	B		7	2	3			GAR04
1999 04 21.42		S	9.2	TT	7.8	R	8	30					JON
1999 04 21.42		S	9.7	TT	31.7	L	5	64	2.5	4			JON
1999 04 22.19		S	8.4	S	7.0	B		10	8	3			DEA
1999 04 22.41		S	9.3	TT	31.7	L	5	64	2	3			JON
1999 04 23.22		S	8.7	AA	5.0	B		7	3	4			GAR04
1999 04 29.08		S	9.0	AA	7.5	R	15	45					OVE
1999 05 01.93	*	B	8.7	AA	35.5	T	6	160	2	3			NAP
1999 05 02.70		S	9.0	AA	7.5	R	15	45					OVE
1999 05 02.73		S	8.5	S	20.0	L	8	83	2.5	5			C0002
1999 05 02.92	x	S	8.5	TJ	23.0	L	5	36	5	3			DES01
1999 05 02.96		B	8.5	AA	20.0	L	6	90	3	3			ALV
1999 05 02.98		S	7.7	AA	21.0	L		60		3			FRE01
1999 05 03.35		M	8.2	AA	5.0	B		10	11	4			SEA01
1999 05 03.48		S	8.0	AA	8.0	B		20	10	4			PEA
1999 05 03.48		S	8.0	AA	8.0	B		20	10	4			PEA
1999 05 03.70		S	8.5	S	20.0	L	8	83	2.8	5			C0002
1999 05 03.71		S	8.5	AA	7.5	R	15	45					OVE
1999 05 03.91	x	S	8.5	TJ	23.0	L	5	67	5	3			DES01
1999 05 03.95		S	7.9	AA	21.0	L		46		3			KRY02
1999 05 03.95		S	8.3	S	7.0	B		10	12	4			DEA
1999 05 03.96		B	8.3	AA	20.0	L	6	90	3.5	3			ALV
1999 05 04.04		S	8.0	AA	21.0	L		46		2			KRY02
1999 05 04.41		M	7.7	TT	5.0	B		10	9	5/			DRE01
1999 05 04.51		S	7.8	AA	8.0	B		20	10.5	4			PEA
1999 05 04.51		S	7.8	AA	8.0	B		20	10.5	4			PEA
1999 05 04.72		S	8.2	S	20.0	L	8	83	2.5	5			C0002
1999 05 04.92		B	8.1	S	7.0	B		10	9.5	4			DEA
1999 05 04.95	x	S	8.4	TJ	23.0	L	5	36	5	3			DES01

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 05.00		S	8.1	AA	21.0	L		46		3			KRY02
1999 05 05.01		S	8.0	AA	21.0	L		70		2			BAC03
1999 05 05.35		S	8.1	TT	7.8	R	8	30	3	3			JON
1999 05 05.40		M	7.8	TI	5.0	B		7	8	5			MAT08
1999 05 05.44		M	7.7	TT	5.0	B		10	11	5			DRE01
1999 05 05.93		S	8.0	AC	20.0	C	10	129		3	0.25	144	JON07
1999 05 05.95	x	S	8.4	TJ	23.0	L	5	36	& 5	3/			DES01
1999 05 05.98		S	8.7	AA	20.0	L	6	80	5	3	0.16	90	TRO02
1999 05 06.06		S	7.5	AA	4.0	B		12		3			FRE01
1999 05 06.39		S	7.8	TT	7.8	R	8	30	4	3			JON
1999 05 06.40		M	7.5	TI	5.0	B		7	9	5			MAT08
1999 05 06.44		C	10.0	TJ	16.0	H	3 a	20	1.4				YOS04
1999 05 06.77		S	7.8	AC	20.0	C	10	129		1	0.5	140	JON07
1999 05 07.00		S	7.5	AA	6.0	B		20		3			FRE01
1999 05 07.35		M	7.5	TT	5.0	B		10	6	6			RAE
1999 05 07.37		S	7.9	TT	7.8	R	8	30	2	4			JON
1999 05 07.40		M	7.2	AA	5.0	B		10	8	5	15 m		SEA01
1999 05 07.43		M	7.5	TT	5.0	B		10	10	5/			DRE01
1999 05 07.45		C	9.2	TJ	18.0	L	6 a	30	1.5				YOS04
1999 05 07.54		S	8.4	HS	15.0	B		25	4	4			HAS08
1999 05 07.96	x	S	8.3	TJ	23.0	L	5	36	6	4			DES01
1999 05 07.98		B	8.2	AA	20.0	L	6	90	4	3			ALV
1999 05 07.98		S	7.6	AA	6.0	B		20		3			FRE01
1999 05 08.02		B	8.5	AC	5.0	B		7	5				AM001
1999 05 08.35		M	7.5	TT	5.0	B		10	6	6			RAE
1999 05 08.42		S	7.9	TT	4.5	R	6	13	5	2			JON
1999 05 08.46		M	7.3	AA	5.0	B		10	7	4	10 m		SEA01
1999 05 08.50		M	7.4	TT	5.0	B		10	9	5			DRE01
1999 05 08.76		S	7.6	AC	20.0	C	10	129		1	0.5	120	JON07
1999 05 08.86		S	7.1	S	10	R	5	27	4	3			MAR02
1999 05 08.96		B	6.9	S	7.0	B		10	12.5	4			DEA
1999 05 08.98		S	7.7	AA	6.0	B		20		3			FRE01
1999 05 09.27		S	7.9	TJ	25.6	L	5	42	7.5	5			BIV
1999 05 09.28		B	7.3	TJ	5.0	B		7	10	5			BIV
1999 05 09.55		M	7.5	AA	10.0	B		25	6	6	0.13	110	SEA
1999 05 09.78		S	7.8	S	20.0	L	8	83	3.0	4			CO002
1999 05 09.84		S	7.7	AC	20.0	C	10	129		1	1.0	122	JON07
1999 05 09.92	x	S	7.9	TT	23.0	L	5	36	10	4/			DES01
1999 05 09.96		S	7.7	AA	6.0	B		20		2			FRE01
1999 05 10.02		S	8.3	AC	5.0	B		7	6.5				AM001
1999 05 10.33		M	7.2	TT	10	B		10	7	6			RAE
1999 05 10.37		S	7.5	TT	4.5	R	6	13	6	2			JON
1999 05 10.83		S	7.7	AC	20.0	C	10	129		1	0.6	137	JON07
1999 05 10.93	x	S	7.7	TJ	23.0	L	5	36	10	5	0.10		DES01
1999 05 11.28		B	7.2	TJ	5.0	B		7	9	5	0.3	120	BIV
1999 05 11.29		S	7.6	TJ	25.6	L	5	42	8	5	0.4	130	BIV
1999 05 11.39		S	7.6	TT	4.5	R	6	13	6	2			JON
1999 05 11.46		C	8.1	TJ	8.0	R	6 a	60	9.1		19 m	124	NAK01
1999 05 11.51	xa	S	7.3	TT	10.0	B		20	6	4			YOS02
1999 05 12.03		S	8.0	AC	14.3	L	6	35	7	5			AM001
1999 05 12.06		S	7.8	AA	6.0	B		20		2			FRE01
1999 05 12.44		C	9.3	TJ	18.0	L	6 a	30	1.6		2.6m	112	YOS04
1999 05 12.94		B	8.1	AA	20.0	L	6	90	4	4			ALV
1999 05 12.95	x	S	7.7	TJ	23.0	L	5	36	10	5	>0.1	120	DES01
1999 05 13.04		S	7.6	AA	6.0	B		20		2			FRE01
1999 05 13.07		B	6.3	S	7.0	B		10	8	4	0.43	130	DEA
1999 05 13.08		B	7.7	AC	5.0	B		7	7	4			AM001
1999 05 13.34		M	6.9	AA	5.0	B		10	8	5			SEA01
1999 05 13.40		M	6.9	TT	5.0	B		10	10	6/			DRE01
1999 05 13.47	xs	S	7.2	TJ	32.0	L	5	91	5	4			NAG08
1999 05 13.48		S	6.8	AA	2.5	B		2					SEA
1999 05 13.77		S	7.5	AC	20.0	C	10	129	1.0	3			JON07
1999 05 13.94	x	S	7.6	TJ	23.0	L	5	36	10	5	>0.1	120	DES01
1999 05 13.96		B	7.9	AA	20.0	L	6	90	4.5	4			ALV
1999 05 13.99		S	7.7	AA	6.0	B		20		2			FRE01

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 14.35		M	6.8	AA	5.0	B		10	11	3			SEA01
1999 05 14.45		M	7.0	TT	5.0	B		10	10	6/			DRE01
1999 05 14.94		B	7.3	AA	35.5	T	6	160	4	3			NAP
1999 05 14.96	x	S	7.6	TJ	23.0	L	5	36	10	5	>0.1	125	DES01
1999 05 15.05		B	7.4	S	7.0	B		10	12	5	0.46	130	DEA
1999 05 15.07		B	7.7	TJ	14.3	L	6	35	7	4			AM001
1999 05 15.27		S	7.3	TJ	5.0	B		7	10	5	0.4	110	BIV
1999 05 15.28		S	7.5	TJ	25.6	L	5	42	9	5	0.5	120	BIV
1999 05 15.37		S	6.7	AA	5.0	B		10	8	3	20	m	SEA01
1999 05 15.40		M	7.0	TI	5.0	B		7	8	5			MAT08
1999 05 15.40		M	7.0	TT	5.0	B		10	8	6			RAE
1999 05 15.46		M	6.9	TT	5.0	B		10	9	6/			DRE01
1999 05 15.88		M	7.0	S	7.0	B		10	11	6			MAR02
1999 05 15.89		M	7.2	S	7.0	B		10	10	5			SAN04
1999 05 15.94	x	S	7.6	TJ	23.0	L	5	36	8	5	>0.1	125	DES01
1999 05 16.04		B	6.5	S	7.0	B		10	12	5	0.53	118	DEA
1999 05 16.06		B	7.2	AA	14.3	L	6	35	5.1	5			AM001
1999 05 16.09	s	M	6.8	NP	5.0	R		8	7	5			CRE01
1999 05 16.45		S	6.5	AA	2.5	B		2					SEA
1999 05 16.46		S	7.0	AA	8.0	B		20	9	4	0.5	120	PEA
1999 05 16.88		M	6.9	S	7.0	B		10	7	4			MAR02
1999 05 16.95	x	S	7.5	TJ	23.0	L	5	36	8	5	>0.1	125	DES01
1999 05 17.04		B	7.5:	AA	14.3	L	6	35		3			AM001
1999 05 17.08		S	7.5:	AA	20.0	T	10	50	3.6	6	>0.5	270	SHA04
1999 05 17.39		M	6.8	TT	5.0	B		10	8	6			RAE
1999 05 17.41		S	6.7	AA	2.5	B		2					SEA
1999 05 17.46		S	7.0	AA	8.0	B		20	7	5	0.2	127	PEA
1999 05 17.47		C	9.4	TJ	18.0	L	6	a 30	1.8		2.3m	121	YOS04
1999 05 17.92	x	S	7.4	TJ	23.0	L	5	36	8	5	>0.1	125	DES01
1999 05 18.05		S	7.2	S	7.0	B		10	11.4	4	0.5	122	DEA
1999 05 18.15	!	J	8.6	SC	25.4	T	5	a 50	8.32	d2/	6.1m	131	ROQ
1999 05 18.32		S	7.7	TT	4.5	R	6	13	4	2			JON
1999 05 18.35		M	6.9	TT	5.0	B		10	8	5/			RAE
1999 05 18.46		M	7.0	TI	5.0	B		7	7	5			MAT08
1999 05 18.85	&	M	7.5	TT	10	B	4	25	6	3			LEH
1999 05 18.99	x	S	7.2	TJ	23.0	L	5	36	8	5	0.1	125	DES01
1999 05 19.28		M	6.8	TT	5.0	B		10	8	5/			RAE
1999 05 19.31		S	6.6	TJ	5.0	B		7	9	5			BIV
1999 05 19.32		S	6.8	TJ	25.6	L	5	42	8	5			BIV
1999 05 19.36		S	7.7	TT	4.5	R	6	13	4	2			JON
1999 05 19.42		S	6.7	AA	2.5	B		2					SEA
1999 05 19.48	a	M	7.1	AA	15.0	B		25	6	5			MIT
1999 05 19.56		S	6.9	AA	8.0	B		20	8.5	4			PEA
1999 05 20.08		S	7.3	AA	20.0	T	10	50	3.9	6			SHA04
1999 05 20.46		C	9.2	TJ	18.0	L	6	a 30	2.5		7.2m	123	YOS04
1999 05 20.47	xa	S	6.8	TJ	10.0	B		20	5.6	5			NAG08
1999 05 20.47	x	C	7.8	HV	8.0	R	6	a 60	10.9		12	m 128	NAK01
1999 05 20.48		S	7.2	S	15.0	R	5	25	5	4/			NAG02
1999 05 20.48	a	C	8.9	GA	20.3	T	9	a 60	2.7				SUZ02
1999 05 20.92		S	6.8	TJ	8.0	B		11	>10	3	0.2	130	DES01
1999 05 20.93	x	S	6.9	TJ	23.0	L	5	67	10	5	0.2	130	DES01
1999 05 20.96	*	B	7.4	AC	14.3	L	6	35	5	6			AM001
1999 05 21.40		M	6.7	TT	5.0	B		10	8	5			RAE
1999 05 21.93	x	S	6.8	TJ	23.0	L	5	67	10	5/			DES01
1999 05 21.93	x	S	6.8	TJ	23.0	L	5	67	10	5/			DES01
1999 05 21.99		B	7.1	AC	5.0	B		7	8	6			AM001
1999 05 22.00		B	7.2	AC	5.0	R	12	50	6	3/			AM001
1999 05 22.27		S	6.9	TJ	5.0	B		7	8	5			BIV
1999 05 22.30		M	6.7	TT	5.0	B		10	8	4/			RAE
1999 05 22.46		S	6.7	AA	8.0	B		20	10	4/			PEA
1999 05 22.93	x	S	6.8	TJ	23.0	L	5	67	8	5			DES01
1999 05 23.27		S	6.9	TJ	5.0	B		7	8	5			BIV
1999 05 23.43		M	7.0	TT	8.0	B		20	6	4			DRE01
1999 05 23.76		S	6.8	S	20.0	L	8	83	2.9	4			C0002
1999 05 23.92		S	6.9	AA	8.0	B		11	7	4			SOU01

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 23.94	x	S	6.8	TJ	23.0	L	5	36	8	5			DES01
1999 05 23.98		B	7.4	AA	5.0	B		7	7	6			AM001
1999 05 24.28		S	6.7	TJ	5.0	B		7	8	5			BIV
1999 05 24.87		S	7.5	TT	10.0	B		25	2.5	4			HAS02
1999 05 24.94	x	S	6.8	TJ	23.0	L	5	36					DES01
1999 05 25.01		B	7.5	AA	14.3	L	6	35	3	4			AM001
1999 05 25.28		S	6.8	TJ	5.0	B		7	7	6			BIV
1999 05 25.99	x	S	6.7	TJ	23.0	L	5	36		4/			DES01
1999 05 26.28		S	6.8	TJ	5.0	B		7	8	6			BIV
1999 05 28.39		M	6.8	TT	8.0	B		20	7	3/			DRE01
1999 05 30.83		S	6.8	AC	5.0	B		7	6	4			KOS
1999 05 30.93	x	S	6.6	TJ	23.0	L	5	36	10	4/			DES01
1999 05 31.33		S	6.6	AA	5.0	B		10					SEA
1999 05 31.48		S	7.0	S	15.0	R	5	25	5	4			NAG02
1999 05 31.77		S	6.6	S	20.0	L	8	83	3.0	5			C0002
1999 05 31.88	a	B	6.9	TJ	10.0	B		14	& 5	6			PER01
1999 05 31.88	a	M	6.5	TJ	10.0	B		14	& 5	6			PER01
1999 05 31.88	a	S	6.5	TJ	10.0	B		14	& 5	6			PER01
1999 05 31.88	a	S	6.5	TJ	10.0	B		14	& 6	4/			VIT01
1999 05 31.94	x	S	6.6	TJ	23.0	L	5	36	10	4			DES01
1999 06 01.35		S	6.6	AA	5.0	B		10					SEA
1999 06 01.78		S	6.6	S	20.0	L	8	83	3.2	5			C0002
1999 06 01.83		S	7.0	AC	5.0	B		7	4	5			KOS
1999 06 01.89		M	7.0	S	7.0	B		10	4.5	5			MAR02
1999 06 01.89	a	M	6.8	TJ	10.0	B		14	& 5	6			PER01
1999 06 01.89	a	S	6.4	TJ	3.4	B		9	& 6	5			VIT01
1999 06 01.89	a	S	6.5	TJ	3.4	B		9	& 6	7			PER01
1999 06 01.89	a	S	6.6	TJ	10.0	B		14	& 5	4/			VIT01
1999 06 01.89	a	S	6.6	TJ	10.0	B		14	& 5	6			PER01
1999 06 01.93	x	S	6.6	TJ	23.0	L	5	36	8	4			DES01
1999 06 01.96		B	7.0	AA	14.3	L	6	35	4.3	5			AM001
1999 06 01.97		S	7.1	AA	6.0	B		20					FRE01
1999 06 02.31		M	6.9	TT	5.0	B		10	8	5/			RAE
1999 06 02.41		M	7.0	HI	5.0	B		7	3	6			MAT08
1999 06 02.69		S	6.7	S	20.0	L	8	83	3.2	5			C0002
1999 06 02.86		M	6.9	S	6.0	B		10	4	4			SAN04
1999 06 02.89	a	M	6.5	TJ	10.0	B		14	& 5	5/			PER01
1999 06 02.89	a	M	6.6	TJ	10.0	B		14	& 6	5			VIT01
1999 06 02.89	a	S	6.3	TJ	3.4	B		9	& 8	4			PER01
1999 06 02.89	a	S	6.5	TJ	10.0	B		14	& 5	5/			PER01
1999 06 02.89	a	S	6.5	TJ	10.0	B		14	& 6	5			VIT01
1999 06 02.93	x	S	6.5	TJ	23.0	L	5	36	10	4			DES01
1999 06 02.93	x	S	6.5	TJ	23.0	L	5	36	10	4			DES01
1999 06 03.08		S	6.6	AA	20.0	T	10	50	3.7	7	&1	270	SHA04
1999 06 03.28		B	6.8	TJ	5.0	B		7	6	6	0.8	130	BIV
1999 06 03.87		S	6.2:	TI	6.0	B		20	& 5	6			RES
1999 06 03.88	&	M	6.4	TT	10	B	4	25	9	3			LEH
1999 06 03.89	x	S	6.7	TJ	23.0	L	5	36	6	4			DES01
1999 06 04.10		M	6.4	AA	8.0	B		16	9	5			CRE01
1999 06 04.30		B	6.7	TJ	5.0	B		7	5	7	0.5	135	BIV
1999 06 04.44		S	6.5	AA	8.0	B		20	6.5	5			PEA
1999 06 04.47	xa	S	7.2	TJ	10.0	B		20	6.3	5/			NAG08
1999 06 04.48		S	6.9	S	15.0	R	5	25	4	6	<0.16		NAG02
1999 06 04.49	xs	M	7.0	TT	10.0	B		20	6	5			YOS02
1999 06 04.89		M	7.1	S	10	R	5	27	4	6			MAR02
1999 06 05.28		M	6.5	TT	5.0	B		10	9	6			RAE
1999 06 05.29		B	6.7	TJ	5.0	B		7	5	7	0.7	120	BIV
1999 06 05.48		S	6.5	AA	8.0	B		20	7	5/			PEA
1999 06 05.83		S	6.6	AC	5.0	B		7	7	5			KOS
1999 06 05.86		S	7.2	AC	20.0	C	10	129	2.4	3			JON07
1999 06 05.89		S	7.1	TT	8.0	B		11	4	3			SOU01
1999 06 05.89	a	M	6.5	TJ	10.0	B		14	& 5	5			VIT01
1999 06 05.89	a	S	6.5	TJ	10.0	B		14	& 5	5			PER01
1999 06 05.89	a	S	6.5	TJ	10.0	B		14	& 5	5			VIT01
1999 06 05.89	x	S	7.1	TT	8.0	B		11	5	2/	0.10	140	DES01

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 05.96		B	6.9	S	7.0	B		10		6			DEA
1999 06 06.29		B	6.7	TJ	5.0	B		7	5	7	0.6	125	BIV
1999 06 06.29		M	6.7	TT	5.0	B		10	6	7			RAE
1999 06 06.44		S	6.4	AA	8.0	B		20	7	5/	0.2	110	PEA
1999 06 06.71		S	6.5	S	10.6	L	8			6/			GRE03
1999 06 06.71		S	6.6	S	20.0	L	8	83	3.5	6			C0002
1999 06 06.90		B	6.8	AA	14.3	L	6	75	3.5	5			AM001
1999 06 06.91		B	6.7	AA	5.0	B		7		7			AM001
1999 06 07.08		S	6.3	AA	20.0	T	10	50	4.1	7	&1	260	SHA04
1999 06 07.28		M	6.6	TT	5.0	B		10	5	6			RAE
1999 06 07.30		B	6.7	TJ	5.0	B		7	5	7	0.8	115	BIV
1999 06 07.41		M	6.7	HI	5.0	B		7	3	6			MAT08
1999 06 07.44		S	6.4	AA	8.0	B		20	6.5	6	0.5	125	PEA
1999 06 07.72		S	6.5	S	20.0	L	8	83	3.2	6			C0002
1999 06 07.72		S	6.5	S	20.0	L	8	83	3.2	6			C0002
1999 06 07.89	a	M	6.7	TJ	10.0	B		14	& 4	6			PER01
1999 06 07.89	a	S	6.7	TJ	10.0	B		14	& 4	6			PER01
1999 06 07.89	a	S	6.7	TJ	10.0	B		14	& 6	4/			VIT01
1999 06 07.92		B	6.8	AA	7.0	B		10	12	6	0.6	130	DEA
1999 06 07.95	x	S	7.1	TJ	23.0	L	5	36	6	3/	0.15	140	DES01
1999 06 08.27		B	6.7	TJ	5.0	B		7	5	7	0.7	120	BIV
1999 06 08.95	x	S	7.1	TJ	23.0	L	5	67	6	2/	0.15	140	DES01
1999 06 09.29		B	6.8	TJ	5.0	B		7	5	5	0.5	120	BIV
1999 06 09.31	w	M	6.5	TT	5.0	B		10	5	6			RAE
1999 06 09.45		S	6.4	AA	8.0	B		20	5.5	5			PEA
1999 06 09.49		M	7.1	AA	15.0	B		25	& 5	6			MIT
1999 06 09.49		S	6.8	S	15.0	R	5	25	5	5			NAG02
1999 06 09.89	a	M	6.7	TJ	10.0	B		14	& 4	6			PER01
1999 06 09.89	a	S	6.7	TJ	10.0	B		14	& 4	6			PER01
1999 06 09.96	x	S	7.1	TJ	23.0	L	5	67	6	3	0.15		DES01
1999 06 10.27		B	6.7	TJ	5.0	B		7	5	5	0.7	125	BIV
1999 06 10.28	w	M	6.7	TT	5.0	B		10	5	6			RAE
1999 06 10.46		S	6.4	AA	8.0	B		20	5.5	5			PEA
1999 06 10.69		S	6.4	S	20.0	L	8	83		5/			C0002
1999 06 11.27		B	6.7	TJ	5.0	B		7	6	5	0.7	115	BIV
1999 06 11.33		M	6.6	AA	10.0	B		25			0.3	115	SEA
1999 06 11.49	xs	M	7.0	TT	10.0	B		20	4	6			YOS02
1999 06 11.89	a	S	6.6	TJ	10.0	B		14	& 6	4/			PER01
1999 06 11.89	x	S	7.3	TJ	8.0	B		11	7	2/			DES01
1999 06 12.27		B	6.4	TJ	5.0	B		7	5	7	0.7	115	BIV
1999 06 12.28		S	6.8	TJ	25.6	L	5	42	4	7	0.6	120	BIV
1999 06 12.47		C	9.7	TJ	18.0	L	6	a 30	2.0		2.6m	111	YOS04
1999 06 12.69		S	6.2	S	11.2	L	8	50	3.4	5/	0.5		C0002
1999 06 13.27		B	6.5	TJ	5.0	B		7	5	7	0.8	120	BIV
1999 06 14.29		S	6.7	TJ	5.0	B		7	4	7			BIV
1999 06 14.44		S	6.7	AA	8.0	B		20	5.5	6			PEA
1999 06 14.89		M	6.7	S	7.0	B		10	7	5			MAR02
1999 06 14.89	%a	S	6.6	TJ	10.0	B		14	& 4.5	5			PER01
1999 06 15.27		S	6.8	TJ	5.0	B		7	5	6			BIV
1999 06 15.90	x	S	7.1	TJ	8.0	B		11	6	2/			DES01
1999 06 16.68		S	6.4	S	20.0	L	8	83	3.0	6			C0002
1999 06 16.89		B	6.6	AA	7.0	B		10	11.2	6	0.43	121	DEA
1999 06 16.90	x	S	7.1	TJ	8.0	B		11	6	2/			DES01
1999 06 17.27		S	6.8	TJ	25.6	L	5	42	3.5	7	0.7	120	BIV
1999 06 17.28		S	6.7	TJ	5.0	B		7	3	8			BIV
1999 06 17.35		M	6.5	AA	10.0	B		25					SEA
1999 06 17.90	x	S	6.9	TJ	8.0	B		11	5	2/			DES01
1999 06 18.89	a\$	S	6.4	TJ	10.0	B		14	& 4.5	2			PER01
1999 06 18.90	x	S	7.0	TJ	8.0	B		11	5	3			DES01
1999 06 19.26	&	M	6.7	TT	5.0	B		10	6	5			RAE
1999 06 19.29		S	6.8	TJ	5.0	B		7	3	8			BIV
1999 06 19.36	a	M	6.5	TT	8.0	B		20	5	7	0.3	128	DRE01
1999 06 20.26	w	M	6.8	TT	5.0	B		10	5.5	6			RAE
1999 06 20.36	a	M	6.4	TT	8.0	B		20	5	6/	0.4	128	DRE01
1999 06 21.27	w	M	6.8	TT	5.0	B		10	6	7			RAE

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 22.27	w	M	6.6	TT	5.0	B		10	5	6			RAE
1999 06 23.26		S	6.5	TJ	5.0	B		7	3.5	7			BIV
1999 06 24.28		S	6.7	TJ	5.0	B		7	3	7			BIV
1999 06 25.27		S	6.6	TJ	5.0	B		7	3.5	7			BIV
1999 06 27.26		S	6.5	TJ	5.0	B		7	3	8			BIV
1999 06 28.26		S	6.7	TJ	5.0	B		7	3	6			BIV
1999 07 02.25		S	6.7	TJ	25.6	L	5	42	3	6			BIV
1999 07 03.26		S	6.8	TJ	25.6	L	5	42	2.5	6			BIV
1999 07 04.26		S	6.9:	TJ	25.6	L	5	42	3	6			BIV
1999 07 27.09		S	6.1:	TJ	10	B		14	4	4			SHA02
1999 07 27.77		C	8.2	TJ	18.0	L	6 a	6	2.6		7.4m	325	YOS04
1999 07 29.77		C	7.5	TJ	18.0	L	6 a	20	3.4		7.8m	321	YOS04
1999 07 30.10		S	6.9:	TJ	10	B		14	4	4			SHA02
1999 07 31.77		C	7.9	TJ	18.0	L	6 a	10	3.1		15.0m	322	YOS04
1999 08 01.05		S	6.5:	AC	6.0	B		20	& 4	4			RES

Comet C/1999 H3 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 30.65		C	14.9	TJ	16.0	H	3 a	30	0.75				YOS04
1999 05 01.69		C	14.1	TJ	16.0	H	3 a	30	0.8				YOS04
1999 05 05.88		S	13.8	HS	35	L	5	237	1.1	4			HOR02
1999 05 05.93		B	13.9	HS	42	L	5	162	1.1	4			LEH
1999 05 07.66		C	14.6	GA	60.0	Y	6 a	120	0.9				NAK01
1999 05 07.70		C	14.5	TJ	18.0	L	6 a	60	0.65				YOS04
1999 05 08.66		C	14.3	TJ	16.0	H	3 a	30	0.8				YOS04
1999 05 09.89		B	13.5	HS	42	L	5	162	1.1	3/			LEH
1999 05 09.89		S	13.3	HS	35	L	5	237	1.2	2/			HOR02
1999 05 13.73		C	14.6	GA	60.0	Y	6 a	120	0.95		1.9m	137	NAK01
1999 05 15.86		S	13.5	HS	35	L	5	158	1.2	2/			HOR02
1999 05 15.96		S	13.9	HS	40.0	L	5	200	0.6	3			BOU
1999 05 16.07		S	13.7	NP	44.5	L	5	125	0.5	2			MAR02
1999 05 16.07		S	13.7	NP	44.5	L	5	125	0.5	3			SAN04
1999 05 16.90		S	13.6	HS	35	L	5	158	1.2	3			HOR02
1999 05 16.93		S	13.3	AC	25.0	L	6	121	0.7	2/			RES
1999 05 16.95		B	13.7	HS	42	L	5	162	1.3	4			LEH
1999 05 17.55		C	14.7	TJ	18.0	L	6 a	90	0.65				YOS04
1999 05 17.86		S	13.5	HS	35	L	5	158	1.2	2/			HOR02
1999 05 17.94		B	13.7	HS	42	L	5	162	1.2	3			LEH
1999 05 17.95		S	13.1	AC	25.0	L	6	121	0.8	2/			RES
1999 05 17.96		S	14.0:	AC	30.5	T	10	117	& 0.5	6			COM
1999 05 18.03		S	13.4	GA	25.4	L	5	104	0.9	3			MEY
1999 05 18.94		B	14.0	HS	42	L	5	162	1.0	4			LEH
1999 05 18.96		S	13.3	GA	25.4	L	5	104	1.3	3/			MEY
1999 05 18.98		S	13.3	AC	25.0	L	6	121	0.9	2			RES
1999 05 19.90		B	13.6	HS	42	L	5	162	1.1	3/			LEH
1999 05 20.67		C	14.5	TJ	16.0	H	3 a	30	0.85				YOS04
1999 05 20.72		C	14.5	GA	60.0	Y	6 a	120	1.0		1.6m	132	NAK01
1999 05 22.03		B	13.4	HS	42	L	5	162	1.2	3/			LEH
1999 05 24.89		S	12.9	HS	44.0	L	5	156	0.7	4			HAS02
1999 05 31.71		C	14.1	TJ	18.0	L	6 a	60	0.65				YOS04
1999 06 01.70		C	14.4	TJ	18.0	L	6 a	60	0.65				YOS04
1999 06 03.89		S	13.6	HS	35	L	5	158	1.3	4			HOR02
1999 06 03.95		B	13.2	HS	42	L	5	162	1.2	4			LEH
1999 06 04.69		C	14.6	TJ	18.0	L	6 a	60	0.65				YOS04
1999 06 04.90		S	13.2	HS	35	L	5	158	1.4	3/			HOR02
1999 06 04.93		B	13.5	HS	42	L	5	162	1.3	3/			LEH
1999 06 04.94		S	13.0	AC	25.0	L	6	121	1.0	2			RES
1999 06 04.94		S	13.0:	AC	25.4	L	5	104	1.0	3/			MEY
1999 06 04.98		S	12.2	NP	32	L	5	165	0.75	2			MAR02
1999 06 05.90		S	13.4	HS	35	L	5	158	1.3	3/			HOR02
1999 06 07.94		S	13.0	AC	25.0	L	6	121	0.9	2			RES
1999 06 08.66		C	14.6	GA	60.0	Y	6 a	120	0.85		1.2m		NAK01
1999 06 08.93		S	13.3	AC	25.4	L	5	104	1.1	3/			MEY
1999 06 08.99		I	[14.0	HS	30	R	20	185					SHA02

Comet C/1999 H3 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 09.89		S	13.3	HS	35	L	5	158	1.3	3			HOR02
1999 06 09.91		B	13.4	HS	42	L	5	162	1.3	3			LEH
1999 06 10.99		S	12.8:	AC	25.0	L	6	121	0.9	2			RES
1999 06 13.44		S	13.6	HS	25.6	L	5	169	0.7	5			BIV
1999 06 14.67		C	14.8	TJ	18.0	L	6	a 60	0.65				YOS04
1999 06 14.99		S	13.1	GA	25.3	L	6	58	& 1.0	3			PER01
1999 06 15.98		I	[14.0	HS	30	R	20	185					SHA02
1999 06 19.00		S	13.2	HS	25.4	J	6	100	0.8	2			BOU
1999 06 19.94		S	12.9	HS	44.0	L	5	156	0.6	4			HAS02
1999 07 03.89		S	13.1	HS	35	L	5	92	1.1	4			HOR02
1999 07 04.89		S	13.1	HS	35	L	5	158	1.0	3/			HOR02
1999 07 05.89		S	13.1	HS	35	L	5	158	1.1	3			HOR02
1999 07 10.51		S	13.7:	HS	25.6	L	5	169	1	2			BIV
1999 07 10.97		S	14.1	NP	45	L	5	125	0.5	1			MAR02
1999 07 10.98		S	13.5	HS	40.0	L	5	133	0.7	3/			BOU
1999 07 10.98		S	14.0	NP	45	L	5	125	0.5	2			SAN04
1999 07 11.41		S	13.5	HS	25.6	L	5	169	0.6	5			BIV
1999 07 14.58		C	14.8	GA	60.0	Y	6	a120	0.8				NAK01
1999 07 14.91		S	13.2	HS	35	L	5	158	1.4	3			HOR02
1999 07 15.89		S	13.1	HS	35	L	5	92	1.4	3			HOR02
1999 07 17.05		S	13.0:	HS	35	L	5	158	1.5	3/			HOR02
1999 07 17.90		S	13.2	HS	35	L	5	158	1.4	3			HOR02
1999 07 17.95		S	13.4	HS	40.0	L	5	133	0.7	3			BOU
1999 07 19.93		S	13.2	AC	25.0	L	6	100	0.9	2			RES
1999 07 21.98		S	13.0	AC	25.0	L	6	100	1.4	2			RES
1999 07 30.49		C	14.5	TJ	18.0	L	6	a 90	0.65				YOS04
1999 07 31.51		C	15.1	TJ	18.0	L	6	a 60	0.45				YOS04

Comet C/1999 J2 (Skiff)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 14.70		C	15.9	GA	60.0	Y	6	a120	0.45		0.6m	31	NAK01
1999 05 16.00		S	15.5	HS	40.0	L	5	200	0.3	4			BOU
1999 05 16.89		S	15.2	HS	35	L	5	237	0.5	3			HOR02
1999 05 17.53		C	15.8	TJ	18.0	L	6	a 90	0.35				YOS04
1999 05 20.62		C	15.9	GA	60.0	Y	6	a120	0.55		0.7m	36	NAK01
1999 05 31.71		C	16.1	TJ	18.0	L	6	a 60	0.45				YOS04
1999 06 03.90		S	14.5	HS	35	L	5	237	0.5	3			HOR02
1999 06 04.70		C	16.2	TJ	18.0	L	6	a 60	0.35				YOS04
1999 06 04.94		S	14.3	HS	35	L	5	237	0.7	3			HOR02
1999 06 05.90		S	14.4	HS	35	L	5	237	0.7	3/			HOR02
1999 06 08.67		C	15.9	GA	60.0	Y	6	a120	0.45		0.7m	43	NAK01
1999 06 09.91		S	14.6	HS	35	L	5	237	0.7	3			HOR02
1999 06 14.68		C	16.7	TJ	18.0	L	6	a 60	0.35				YOS04
1999 06 19.95		S	14.4	HS	44.0	L	5	226	0.3	3			HAS02
1999 07 03.90		S	14.4	HS	35	L	5	237	0.8	3			HOR02
1999 07 04.18		J	14.8	SC	25.4	T	5	a 60	0.42	s6			ROQ
1999 07 04.90		S	14.4	HS	35	L	5	237	0.9	3			HOR02
1999 07 05.90		S	14.5	HS	35	L	5	237	0.8	2/			HOR02
1999 07 08.62		C	15.1	TJ	18.0	L	6	a 60		8	0.7m	20	YOS04
1999 07 10.99		S	14.9	HS	40.0	L	5	200	0.4	4			BOU
1999 07 14.59		C	15.8	GA	60.0	Y	6	a120	0.5		0.9m	35	NAK01
1999 07 14.90		S	14.7	HS	35	L	5	237	0.7	2/			HOR02
1999 07 15.90		S	14.6	HS	35	L	5	237	0.7	2/			HOR02
1999 07 17.91		S	14.5	HS	35	L	5	237	0.8	2/			HOR02
1999 07 17.97		S	14.8	HS	40.0	L	5	200	0.4	4			BOU
1999 07 31.52		C	15.5	TJ	18.0	L	6	a 90	0.55				YOS04

Comet C/1999 J3 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 14.69		C	17.7	GA	60.0	Y	6	a240	0.3				NAK01
1999 05 15.98		S	15.2	HS	40.0	L	5	200	0.5	1/			BOU
1999 05 17.53	1	C	[16.5	TJ	18.0	L	6	a 90					YOS04
1999 05 20.60		C	17.4	GA	60.0	Y	6	a240	0.4			190	NAK01

Comet C/1999 J3 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 09.52	a	C	16.6	GA	60.0	Y	6	a240	0.5		0.7m	98	NAK01
1999 06 12.53		C	17.0:	TJ	18.0	L	6	a 60	0.3				YOS04
1999 07 10.97		S	14.0	HS	40.0	L	5	200	0.8	1/			BOU
1999 07 16.28		S	12.2	HS	25.6	L	5	84	1.5	3			BIV
1999 07 17.33		S	12.4	HS	25.6	L	5	84	1	2			BIV
1999 07 17.93		S	13.0	AC	25.0	L	6	121	1.1	2			RES
1999 07 18.02		S	12.6	HS	40.0	L	5	133	1.3	1/			BOU
1999 07 19.98		S	12.6	AC	25.0	L	6	100	1.0	1			RES
1999 07 21.97		S	11.9	AC	25.0	L	6	100	1.8	1			RES
1999 07 24.03		I	[12.0	HS	20	T	10	75					SHA02
1999 07 29.76		C	14.2	TJ	18.0	L	6	a 60	1.0	3			YOS04
1999 07 31.47		C	13.4	TJ	18.0	L	6	a 60	1.0	1			YOS04

Comet C/1999 J4 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 20.64		C	18.5	GA	60.0	Y	6	a240	0.3				NAK01

Comet C/1999 K2 (Ferris)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 31.75		C	16.8:	TJ	18.0	L	6	a 60	0.3				YOS04
1999 07 08.71		C	16.3	GA	60.0	Y	6	a240	0.55		0.6m	184	NAK01
1999 07 11.02		S	15.0	HS	40.0	L	5	200	0.3	3			BOU

Comet C/1999 K3 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 31.72		C	16.6	TJ	18.0	L	6	a 60	0.3				YOS04
1999 06 04.96		B	14.5	HS	42	L	5	263	0.6	4			LEH
1999 06 08.69		C	16.6	GA	60.0	Y	6	a240	0.5				NAK01
1999 06 09.94		B	14.4	HS	42	L	5	162	0.8	4			LEH
1999 07 02.17		J	17.1	SC	25.4	T	5	a 60	0.34	s5	?		ROQ
1999 07 08.60		C	17.7	GA	60.0	Y	6	a240	0.35				NAK01
1999 07 10.95		S	14.3	HS	40.0	L	5	133	0.5	2			BOU
1999 07 14.60		C	18.2	GA	60.0	Y	6	a240	0.3				NAK01
1999 07 17.98		S	14.4	HS	40.0	L	5	200	0.6	2			BOU

Comet C/1999 K5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 31.75		C	16.1	TJ	18.0	L	6	a 60	0.4				YOS04
1999 06 08.73		C	15.7	GA	60.0	Y	6	a120	0.35		0.6m	323	NAK01
1999 06 09.67		C	16.4	TJ	18.0	L	6	a 60	0.35				YOS04
1999 06 11.68		C	16.2	TJ	18.0	L	6	a 60	0.35				YOS04
1999 06 14.70		C	16.2	TJ	18.0	L	6	a 60	0.3				YOS04
1999 07 08.65		C	15.3	GA	60.0	Y	6	a120	0.35	8/	0.8m	358	NAK01
1999 07 17.96		S	[14.5	HS	44.0	L	5	226					HAS02
1999 07 31.59		C	15.6	TJ	18.0	L	6	a 60		8			YOS04

Comet C/1999 K6 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 31.73		C	15.5	TJ	18.0	L	6	a 60	0.45				YOS04
1999 06 01.67		C	16.2	TJ	18.0	L	6	a 60	0.25				YOS04
1999 06 04.67	1	C	[15.8	TJ	18.0	L	6	a 60					YOS04
1999 06 04.97		B	14.6	HS	42	L	5	162	0.5	4			LEH
1999 06 08.77		C	16.1	GA	60.0	Y	6	a120	0.5				NAK01
1999 06 09.66		C	15.1	TJ	18.0	L	6	a 60	0.6				YOS04
1999 06 09.95		B	14.4	HS	42	L	5	162	0.6	4/			LEH
1999 06 13.66		C	15.2	TJ	18.0	L	6	a 60	0.45				YOS04
1999 06 14.61		C	15.1	TJ	18.0	L	6	a 60	0.35				YOS04
1999 06 27.19		J	15.3	SC	25.4	T	5	a 60	0.29	s1/			ROQ
1999 07 08.69		C	15.3	GA	60.0	Y	6	a120	0.7				NAK01
1999 07 11.01		S	14.0	HS	40.0	L	5	133	0.5	4			BOU

Comet C/1999 K6 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 07 14.99		S	14.6	HS	35	L	5	237	0.6	2/			HOR02
1999 07 15.93		S	14.5	HS	35	L	5	237	0.6	2/			HOR02
1999 07 17.90		S	14.4	HS	35	L	5	237	0.6	2			HOR02
1999 07 17.97		S	14.0	HS	44.0	L	5	226					HAS02
1999 07 17.99		S	14.2	HS	40.0	L	5	200	0.4	3			BOU
1999 07 19.97		S	13.9	AC	25.0	L	6	121	0.5	3			RES
1999 07 30.59		C	15.7	TJ	18.0	L	6	a 90	0.5				YOS04
1999 07 31.69		C	16.5	TJ	18.0	L	6	a 90	0.6				YOS04

Comet C/1999 K7 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 08.65		C	17.8	GA	60.0	Y	6	a240	0.35				NAK01
1999 07 07.59		C	18.7	GA	60.0	Y	6	a240	0.25				NAK01

Comet C/1999 K8 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 31.76		C	16.0	TJ	18.0	L	6	a 60	0.35				YOS04
1999 06 01.68		C	15.8	TJ	18.0	L	6	a 60	0.25				YOS04
1999 06 04.71		C	16.4	TJ	18.0	L	6	a 60	0.3				YOS04
1999 06 04.93		S	15.0	HS	35	L	5	237	0.4	3			HOR02
1999 06 05.94		S	15.0	HS	35	L	5	237	0.4	2/			HOR02
1999 06 08.78		C	15.5	GA	60.0	Y	6	a120	0.6				NAK01
1999 06 09.97		B	14.3	HS	42	L	5	162	0.7	4			LEH
1999 06 14.71		C	15.8	TJ	18.0	L	6	a 60	0.5				YOS04
1999 07 04.93		S	14.5	HS	35	L	5	237	0.5	3			HOR02
1999 07 05.91		S	14.3	HS	35	L	5	237	0.6	3			HOR02
1999 07 08.73		C	15.1	GA	60.0	Y	6	a120	0.75				NAK01
1999 07 10.93		S	14.5	HS	40.0	L	5	400		3			BOU
1999 07 15.01		S	14.2	HS	35	L	5	237	0.8	2			HOR02
1999 07 15.92		S	14.3	HS	35	L	5	237	0.7	2/			HOR02
1999 07 17.89		S	14.2	HS	35	L	5	237	0.8	2/			HOR02
1999 07 17.97		S	14.5	HS	44.0	L	5	156					HAS02
1999 07 18.01		S	14.5	HS	40.0	L	5	200	0.4	2			BOU
1999 07 30.55		C	14.6	TJ	18.0	L	6	a 90	0.65				YOS04
1999 07 31.63		C	14.7	TJ	18.0	L	6	a 90	0.45				YOS04

Comet C/1999 L2 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 07 08.57		C	16.8	GA	60.0	Y	6	a120	0.35				NAK01
1999 07 15.51		C	16.8	GA	60.0	Y	6	a120	0.55				NAK01

Comet C/1999 N2 (Lynn)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 07 15.87		S	7.7	AA	8.0	B		11					SOU01
1999 07 15.87		S	7.7	AA	13.5	L	5	21					DES01
1999 07 15.87		S	7.7	AA	13.5	L	5	21					SOU01
1999 07 15.87		S	7.7	TJ	23.0	L	5	36	5	5			SOU01
1999 07 15.87		S	7.8	TJ	8.0	B		11					DES01
1999 07 15.87	x	S	7.7	TJ	23.0	L	5	36	6	5			DES01
1999 07 15.87	x	S	7.7	TJ	23.0	L	5	67			0.15	170	DES01
1999 07 16.25		S	6.4	TJ	25.6	L	5	42	7	5			BIV
1999 07 16.39		M	7.0	HI	5.0	B		7	5	6			MAT08
1999 07 16.87	x	S	7.5	TJ	8.0	B		11	7	5			DES01
1999 07 17.26		S	6.8	TJ	5.0	B		7	5	5			BIV
1999 07 17.27		S	7.1	TJ	25.6	L	5	42	4	7	0.3	150	BIV
1999 07 17.37		M	7.0	TT	5.0	B		10	8	4			DRE01
1999 07 17.88	x	S	7.5	TJ	8.0	B		11	7	4/	0.15	135	DES01
1999 07 18.26		S	7.0	TJ	25.6	L	5	42	4	7	0.3	150	BIV
1999 07 18.27		S	6.8	TJ	5.0	B		7	5	5			BIV
1999 07 18.37		M	7.1	TT	8.0	B		20	7	5			DRE01
1999 07 19.35		S	7.1	AA	10.0	B		25					SEA

Comet C/1999 N2 (Lynn) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 07 20.34		S	7.1	AA	5.0	B		10	4	4			SEA
1999 07 20.40		M	7.2	HI	5.0	B		7	5	6			MAT08
1999 07 21.46		S	7.2	AA	8.0	B		20	6	5			PEA
1999 07 22.46		S	7.3	AA	8.0	B		20	5.5	5			PEA
1999 07 23.46		S	7.2	AA	8.0	B		20	7	5			PEA
1999 07 25.38		M	7.1	TT	8.0	B		20	6	5			DRE01
1999 07 26.46		S	7.5	AA	8.0	B		20		4/			PEA
1999 07 29.89	x	S	7.9	TJ	8.0	B		11	3	5			DES01
1999 07 30.45		S	8.0	AA	8.0	B		20	6.5	4			PEA
1999 07 30.46		C	9.4	TJ	18.0	L	6 a	20	2.6				YOS04
1999 07 30.85		S	7.5:	AC	6.0	B		20	& 2	3			RES
1999 07 31.45		S	8.0	AA	8.0	B		20	7	4/			PEA
1999 07 31.46		C	9.1	TJ	18.0	L	6 a	20	3.1		10.6m	110	YOS04
1999 07 31.46	xa	S	7.3	TJ	32.0	L	5	58	3.0	6			NAG08
1999 07 31.47		S	7.4	TJ	25.4	T	6	32	5.5	7			YOS04
1999 07 31.91		B	7.8	AA	14.3	L	6	35	1	6			AM001
1999 08 01.48	a	M	7.5	HV	15.0	B		25	3	6			MIT
1999 08 01.48	xa	S	7.3	TJ	5.0	B		12	7	6			NAG08
1999 08 01.85		S	7.7	AC	6.0	B		20	3.5	3/			RES
1999 08 01.92		B	8.0	AA	14.3	L	6	35	1	5			AM001

Comet 2P/Encke

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 06 05.35		S	7.3:	SC	11	L	4	17	2	8			HAL
1997 06 09.35		S	7.3:	SC	11	L	4	43	2	7/			HAL
1997 06 22.38		S	7.4	SC	5.0	B		10	8	2/			HAL

Comet 9P/Tempel 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 07.49		C	19.0	GA	60.0	Y	6 a	240		9			NAK01

Comet 10P/Tempel 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 11.43		S	14.3:	HS	25.6	L	5	169	0.7	3			BIV
1999 05 13.72		C	16.1	GA	60.0	Y	6 a	120	0.4		0.6m	289	NAK01
1999 05 15.64		S	[13.0	HS	20	L	7	158					MAT08
1999 05 16.02		S	15.1	HS	40.0	L	5	200	& 0.5	1/			BOU
1999 05 16.97		S	13.4:	AC	25.0	L	6	121	0.7	2/			RES
1999 05 17.03		S	13.5	HS	35	L	5	237	1.0	2			HOR02
1999 05 17.80		S	[14.0	VN	41	L	4	200	! 0.5				PEA
1999 05 17.95		S	13.5	AC	25.0	L	6	121	0.6	3/			RES
1999 05 17.97		S	13.7:	HS	30	R	20	185	0.5	2			SHA02
1999 05 18.98		S	13.4	AC	25.0	L	6	121	0.7	3			RES
1999 05 19.50		S	14.9:	HS	25.6	L	5	169	0.4				BIV
1999 05 20.98		S	12.9:	HS	30	R	20	185	0.8	2			SHA02
1999 05 24.90		S	[13.0	HS	44.0	L	5	156					HAS02
1999 06 03.92		S	12.3	GA	25.4	L	5	104	1.2	3/			MEY
1999 06 04.92		S	12.8	HS	35	L	5	237	1.6	2/			HOR02
1999 06 04.93		S	12.4	GA	25.4	L	5	104	1.4	3			MEY
1999 06 04.94		S	12.6	AC	25.0	L	6	61	1.1	3			RES
1999 06 05.92		S	12.6	HS	35	L	5	158	1.9	2			HOR02
1999 06 06.21	J	13.5	SC	25.4	T	5 a	60	0.34	s5/	?			ROQ
1999 06 06.96		S	10.3	AC	6.3	R	13	52	6	1			KOS
1999 06 07.94		S	12.3	AC	25.0	L	6	61	0.9	2/			RES
1999 06 08.64		C	14.6	GA	60.0	Y	6 a	120	0.65		1.1m	263	NAK01
1999 06 08.97		S	12.4	GA	25.4	L	5	104	1.6	3			MEY
1999 06 08.97		S	13.5	HS	30	R	20	105	1.1	2			SHA02
1999 06 09.90		S	12.3	HS	35	L	5	158	2.2	2			HOR02
1999 06 10.68		S	13.0:	HS	20	L	7	158	1	2			MAT08
1999 06 10.99		S	12.0	AC	25.0	L	6	61	1.2	3/			RES
1999 06 12.41		S	13.2	HS	25.6	L	5	84	1.2	4			BIV
1999 06 12.58		C	15.1	TJ	18.0	L	6 a	60		9			YOS04

Comet 10P/Tempel 2 [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 13.45		S	13.0	HS	25.6	L	5	84	1.2	5			BIV
1999 06 14.45		S	12.9	HS	25.6	L	5	84	0.9	5			BIV
1999 06 15.96		S	12.7	HS	30	R	20	185	0.9	2			SHA02
1999 06 16.56		S	12.9	GA	25.4	L	4	71					SEA
1999 06 16.97		S	12.5	AC	25.4	J	6	88	1.3	1			BOU
1999 06 17.40		S	12.9	HS	25.6	L	5	84	1.3	5			BIV
1999 06 17.94		S	11.8:	AC	25.4	L	5	104	1.1	3			MEY
1999 06 18.98		S	12.0	AC	25.4	J	6	100	1.3	1/			BOU
1999 06 19.93		S	12.9	HS	44.0	L	5	156	1.1	4			HAS02
1999 06 22.01		S	12.4	HS	30	R	20	185	0.7	2			SHA02
1999 07 01.30		S	11.7:	HS	25.6	L	5	42	1.5	5			BIV
1999 07 01.92	x	S	11.6	TJ	23.0	L	5	67	2	2/			DES01
1999 07 02.94	x	S	11.6	TJ	23.0	L	5	92	2	2/			DES01
1999 07 03.33		S	11.2	HS	25.6	L	5	42	1.8	5			BIV
1999 07 03.89		S	11.6	HS	35	L	5	92	2.5	2			HOR02
1999 07 03.94		S	10.9	AC	25.0	L	6	61	2.0	2/			RES
1999 07 04.33		S	11.4	HS	25.6	L	5	42	1.5	5			BIV
1999 07 04.52		S	11.5:	HS	20	L	7	158	3	2			MAT08
1999 07 04.88		S	11.6	HS	35	L	5	92	2.3	2			HOR02
1999 07 05.95		S	12.5	HS	30	R	20	105	1.3	1			SHA02
1999 07 07.60	x	S	11.5	GA	25.4	L	4	113	1.8	4			YOS02
1999 07 08.54		S	11.5	HS	20	L	7	158	3	2			MAT08
1999 07 08.59		C	12.9	GA	60.0	Y	6	a120	1.6				NAK01
1999 07 09.51		S	11.0	HS	20	L	7	45	5	2			MAT08
1999 07 09.96		S	10.8	AC	25.0	L	6	61	2.5	2			RES
1999 07 10.35		S	11.3	HS	25.6	L	5	42	3.0	3			BIV
1999 07 10.42		S	12.1	HS	25	L	5	75	1.5	5			RAE
1999 07 10.93	x	S	11.5	TJ	23.0	L	5	92	2	2/			DES01
1999 07 10.94	x	S	11.6	TT	40.0	L	5	95	1.2	2			BOU
1999 07 11.34		S	11.4	HS	25.6	L	5	42	3.0	3			BIV
1999 07 11.94		I	[10.2	TJ	10	B		14					SHA02
1999 07 11.94	x	S	11.5	TJ	23.0	L	5	92	2	3			DES01
1999 07 12.43		S	10.8	TI	20	L	7	45	5	2			MAT08
1999 07 12.94	x	S	11.5	TJ	23.0	L	5	92	2	2/			DES01
1999 07 12.95		I	[10.8	TJ	10	B		14					SHA02
1999 07 14.30		S	11.1	HS	25.6	L	5	42	3.0	4			BIV
1999 07 14.58		S	11.1	AC	25.4	L	4	46	3.0	5			YOS02
1999 07 14.90		S	10.9	TT	35	L	5	92	2.6	2			HOR02
1999 07 15.88		S	10.9	TT	35	L	5	92	2.4	2/			HOR02
1999 07 15.97	x	S	11.5	TJ	23.0	L	5	92	2	1/			DES01
1999 07 15.97	x	S	11.5:	TJ	23.0	L	5	92	1	0			SOU01
1999 07 16.30		S	11.0	TJ	25.6	L	5	42	3.0	3			BIV
1999 07 16.94		I	[11.2	TJ	10	B		14					SHA02
1999 07 17.41		S	11.4:	HS	25.6	L	5	42	3.0	4			BIV
1999 07 17.88		S	10.6	TT	35	L	5	92	2.5	1/			HOR02
1999 07 17.94	x	S	11.4	TT	40.0	L	5	77	1.8	1/			BOU
1999 07 17.95		S	11.5:	TJ	30	R	20	105	1.2	1			SHA02
1999 07 17.95		S	11.7	HS	44.0	L	5	100	1.2	3			HAS02
1999 07 18.88		M	11.5	TI	42	L	5	66	2	2			KUJ
1999 07 18.94		S	12.7:	HS	30	R	20	105	2.2	1			SHA02
1999 07 19.93		S	10.7	AC	25.0	L	6	61	2.0	2/			RES
1999 07 20.90		[	10.5	HS	40.6	T	10	65	!	2			CHE03
1999 07 21.94		S	10.5	AC	25.0	L	6	61	2.1	2/			RES
1999 07 22.91		[	10.5	HS	40.6	T	10	65	!	2			CHE03
1999 07 30.47		S	11.4	VN	41	L	4	90	2.0	3/			PEA
1999 07 31.48		S	10.7:	TJ	32.0	L	5	91	& 2	3			NAG08
1999 07 31.55		C	13.6	TJ	18.0	L	6	a 60	0.85				YOS04

Comet 21P/Giacobini-Zinner

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 06 14.21		I	[14.0:		41	L	4	183					HAL
1998 06 15.22		I	[14.0:		41	L	4	183					HAL
1998 06 28.33		I	[14.0:		41	L	4	183					HAL
1998 08 26.87		S	12.2	HS	27	L	6	83	1.5	2/			TOT03

Comet 21P/Giacobini-Zinner [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 09 23.82		S	11.0	HS	27	L	6	83	1.5	2/			TOT03
1998 09 27.19		S	10.4	S	20	T	10	100	2.1	1			PRY
1998 10 09.79		S	10.5	HS	27	L	6	120	3	4/			TOT03
1998 10 13.79		S	10.3	HS	27	L	6	83	3.5	5	0.06	90	TOT03
1998 10 16.79		S	9.9	AA	15.5	L	7	154	3.5				KOC03
1998 10 21.76		S	9.7	HS	27	L	6	83	2.5	4/	0.06	90	TOT03
1998 10 22.15		S	8.9	S	20	T	10	100	2.9	4	1.5m	45	PRY
1998 10 22.35		S	10.4	TT	31.7	L	5	64	1.0	2			JON
1998 10 23.08		S	9.0	S	20	T	10	100	2.8	4			PRY
1998 10 23.75		S	9.6	AA	15.5	L	7	154	3.5				KOC03
1998 10 24.36		S	10.1	TT	31.7	L	5	64	& 0.5	2			JON
1998 11 05.71		S	8.8	AA	5.0	B		10	3	4			SAN07
1998 11 11.76		S	9.0	HS	27	L	6	83	4	5	0.15	90	TOT03
1998 11 12.71		S	9.0	AA	5.0	B		10	3.5	s5			SAN07
1998 11 15.40		S	9.8	TT	31.7	L	5	64	1.5	2			JON
1999 01 17.82	x	S	11.0	TT	35	M	10	90	2	3			PLE01
1999 03 12.80	x	S	12.5	HS	20	R	15	75	< 2	2			PLE01
1999 03 17.28		S	13.1	HS	25.6	L	5	84	0.8	5			BIV
1999 03 23.27		S	13.0	HS	25.6	L	5	169	0.8	4			BIV
1999 04 05.25		S	13.1	HS	25.6	L	5	84	1.0	3			BIV
1999 04 08.25		S	13.4	HS	25.6	L	5	84	1.0	3			BIV
1999 05 07.46	1	C	14.9	TJ	18.0	L	6	a 60					YOS04

Comet 29P/Schwassmann-Wachmann 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 16.48		I	[13.5:		41	L	4	183					HAL
1997 02 11.44		S	13.1	AC	41	L	4	72	2	2/			HAL
1997 04 10.28		I	[13.5:		41	L	4	183					HAL
1997 05 08.27		S	13.4	NP	41	L	4	183	1.5	1/			HAL
1997 06 03.19		S	12.7	NP	41	L	4	72	1.5	4			HAL
1997 06 30.18		I	[13 :		41	L	4	183					HAL
1997 07 01.17		I	[13.5:		41	L	4	183					HAL
1997 11 28.53		I	[12.0:		41	L	4	183					HAL
1998 01 04.50		I	[13.5:		41	L	4	183					HAL
1998 01 25.47		M	12.4	NP	41	L	4	72	0.2	8/			HAL
1998 01 26.48		M	12.5	NP	41	L	4	72	0.2	8			HAL
1998 01 29.47		M	12.8	NP	41	L	4	72	0.5	6/			HAL
1998 02 06.47		S	12.7	NP	41	L	4	72	1	4			HAL
1998 03 20.29		S	12.7	NP	41	L	4	72	1	5			HAL
1998 03 25.31		S	12.6	NP	41	L	4	72	1.5	4			HAL
1998 04 02.32		S	12.8	NP	41	L	4	72	1.6	2/			HAL
1998 04 21.25		I	[13.5:		41	L	4	183					HAL
1998 05 29.22		I	[13.0:		41	L	4	183					HAL
1998 05 30.22		I	[13.5:		41	L	4	183					HAL
1998 06 14.20		I	[13.5:		41	L	4	183					HAL
1998 06 28.16		I	[13.5:		41	L	4	183					HAL
1999 04 20.44		S	13.6	HS	25.6	L	5	169	0.8	5			BIV
1999 04 22.49		S	14.0	HS	25.6	L	5	169	0.7	4			BIV
1999 05 06.63	a	C	13.9:	GA	60.0	Y	6	a120	1.4	s1			NAK01
1999 05 06.63	a	c	16.3:	GA	60.0	Y	6	a120					NAK01
1999 05 13.61		S	[13.0	HS	20	L	7	158					MAT08
1999 05 13.62	a	C	13.8	GA	60.0	Y	6	a120	1.7	s0/			NAK01
1999 05 13.62	a	c	16.7	GA	60.0	Y	6	a120					NAK01
1999 05 17.60		S	[13.0	HS	20	L	7	158					MAT08
1999 05 17.79		S	[14.0	VN	41	L	4	200	! 0.5				PEA
1999 05 20.51		C	16.6	TJ	18.0	L	6	a 60	0.2				YOS04
1999 05 20.65		C	14.0	GA	60.0	Y	6	a120	1.7	s0			NAK01
1999 05 20.65		c	16.8	GA	60.0	Y	6	a120					NAK01
1999 05 21.78		S	[13.0	VN	41	L	4	200	! 0.5				PEA
1999 05 22.72		S	13.9	VN	41	L	4	200	0.8	2			PEA
1999 06 05.58	a	C	14.5	GA	60.0	Y	6	a120	+ 0.25	8/			NAK01
1999 06 07.48		S	[13.0	HS	20	L	7	158					MAT08
1999 06 09.55	a	C	14.2	GA	60.0	Y	6	a120	+ 0.65	8			NAK01
1999 06 12.42		S	13.8	HS	25.6	L	5	169	0.8	4			BIV

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

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 12.51		C	14.4	TJ	18.0	L	6	a 60	0.45				YOS04
1999 06 13.43		S	14.0	HS	25.6	L	5	169	0.8	2			BIV
1999 07 01.93	x	S	12.6	TJ	23.0	L	5	92	1	1			DES01
1999 07 07.52	a	C	14.4:	GA	60.0	Y	6	a120	1.3	s0/			NAK01
1999 07 07.52	a	c	16.8:	GA	60.0	Y	6	a120					NAK01
1999 07 08.55		S	[13.0	HS	20	L	7	158					MAT08
1999 07 15.49		C	15.0	TJ	60.0	Y	6	a120	1.0	s0			NAK01
1999 07 15.49		c	17.3	TJ	60.0	Y	6	a120					NAK01

Comet 37P/Forbes

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 22.60		S	13.0	HS	25.6	L	5	169	1.0	3			BIV
1999 05 01.77		C	12.8:	TJ	16.0	H	3	a 30	0.7				YOS04
1999 05 07.76		C	13.9	TJ	18.0	L	6	a 60	0.4				YOS04
1999 05 11.56		S	12.6	HS	25.6	L	5	169	1.0	3			BIV
1999 05 13.79	a	C	13.0	GA	60.0	Y	6	a120	1.3		3.1m	244	NAK01
1999 05 15.60		S	12.6	HS	25.6	L	5	84	1.0	3			BIV
1999 05 15.77		S	13.0:	HS	20	L	7	158	1	2			MAT08
1999 05 18.73		S	12.9	GA	25.4	L	4	71					SEA
1999 05 19.57		S	12.7	HS	25.6	L	5	84	1.2	3			BIV
1999 05 20.74		C	13.4	TJ	16.0	H	3	a 30	0.5				YOS04
1999 05 21.88		S	12.7	VN	41	L	4	90	2.0	2			PEA
1999 05 22.88		S	12.7	VN	41	L	4	90	2.1	2			PEA
1999 05 23.87		S	12.6	VN	41	L	4	90	1.4	2			PEA
1999 06 12.56		S	11.0	HS	25.6	L	5	42	1.4	5			BIV
1999 06 13.54		S	10.9	TJ	25.6	L	5	42	1.8	4			BIV
1999 06 14.61		S	11.2	HS	25.6	L	5	42	1.5	5			BIV
1999 06 14.73		C	12.7	TJ	18.0	L	6	a 60	1.1		1.6m	252	YOS04
1999 06 17.59		S	11.3	HS	25.6	L	5	42	2.0	4			BIV
1999 06 18.71		S	11.5	HS	20	L	7	45	1.5	3			MAT08
1999 06 19.56		S	11.2	HS	25.6	L	5	42	1.8	3	0.03	260	BIV
1999 06 19.71		S	11.5	HS	20	L	7	45	1.5	3			MAT08
1999 06 20.57		S	11.3	HS	25.6	L	5	42	2.0	2			BIV
1999 07 09.69		S	11.8	HS	20	L	7	45	2	3			MAT08
1999 07 10.58		S	12.2	HS	25.6	L	5	42	1.8	2	0.02	250	BIV
1999 07 11.03	x	S	11.8	TT	40.0	L	5	133	1.3	1/			BOU
1999 07 11.59		S	12.0	HS	25.6	L	5	42	2.0	2			BIV
1999 07 14.53		S	12.5	HS	25.6	L	5	84	2.0	2			BIV
1999 07 15.03		S	12.0	HS	35	L	5	158	1.6	2/			HOR02
1999 07 16.49		S	13.0	HS	25.6	L	5	84	1.5	1			BIV
1999 07 17.05		S	11.8	HS	35	L	5	158	1.8	2/			HOR02
1999 07 17.98		S	12.8	HS	44.0	L	5	156	0.8	3			HAS02
1999 07 18.04	x	S	12.0	TT	40.0	L	5	133	1.2	2			BOU
1999 07 20.01		S	11.3	AC	25.0	L	6	100	1.8	2/			RES
1999 07 23.82		S	13.0	VN	41	L	4	45	1.0	1			PEA
1999 07 24.68		C	13.6	TJ	16.0	H	3	a 40	1.0				YOS04
1999 07 24.87		S	13.1	VN	41	L	4	200	1.3	2			PEA
1999 07 29.74		C	14.3	HS	18.0	L	6	a 90	0.8		1.7m	243	YOS04
1999 07 30.61		C	14.2	TJ	18.0	L	6	a 60	0.45		1.1m	248	YOS04

Comet 43P/Wolf-Harrington

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 08 03.45		S	13.2:	NP	41	L	4	183	1.5	2			HAL
1997 08 16.47		S	13.2:	NP	41	L	4	183	1.5	2			HAL
1997 09 01.48		S	13.0:	NP	41	L	4	183	1.5	2/			HAL
1997 09 28.47		S	12.6	WA	41	L	4	72	2	3/			HAL
1997 10 13.49		I	12.5:		41	L	4	183	1.5	5			HAL

Comet 46P/Wirtanen

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 03.09		S	12.6	AC	41	L	4	72	3	2			HAL
1997 01 31.09		S	11.2	AC	41	L	4	72	3	3			HAL

Comet 46P/Wirtanen [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 02 08.11	!	S	10.5	PC	41	L	4	72	3	4			HAL
1997 02 10.11	!	S	10.5	PC	41	L	4	72	3	4			HAL
1997 03 04.11	!	M	9.8	PC	41	L	4	72	2.5	4/			HAL
1997 03 10.11	!	S	9.6	PC	41	L	4	72	3	3/			HAL
1997 03 31.12		S	9.5:	PC	41	L	4	72	3	2/			HAL
1997 04 07.12		M	9.4	PC	41	L	4	72	3	3			HAL
1997 05 08.15	!	S	11.7	PC	41	L	4	183	1.5	2			HAL

Comet 48P/Johnson

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 08 11.28		I	[14.0:		41	L	4	183	0.5				HAL
1997 08 31.26		I	[13.5:		41	L	4	183					HAL

Comet 49P/Arend-Rigaux

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 13.63		C	19.0	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 10 30.09		S	12.3	HS	35	L		80	1.5	1			SZA
1998 10 31.14		S	13.4	HS	27	L		120	0.7	1			TOT03
1998 12 09.89		S	12.6	HS	27	L		120	0.7	2			TOT03
1998 12 19.85		S	11.8	TT	35	M	10	90	2.5	s6/			PLE01
1999 01 21.90	x	B	11.7	HS	35	M	10	90	3.1	S5			DRA02
1999 01 21.96		S	11.3	TT	35	M	10	90	7	s4/			PLE01
1999 03 12.00		S	11.6	TT	20	R	15	75	3	s4			PLE01
1999 03 17.33		S	13.0	HS	25.6	L	5	84	1.0	2			BIV
1999 03 23.45		S	13.3	HS	25.6	L	5	169	1.0	2			BIV
1999 04 05.29		S	13.5:	HS	25.6	L	5	84	1.0	2			BIV
1999 04 08.30		S	13.6	HS	25.6	L	5	84	1.0	1			BIV
1999 04 18.83		M	12.5	HS	42	L	5	81	1.8	3			LEH
1999 04 19.85		M	12.6	HS	42	L	5	81	1.7	3			LEH
1999 04 20.85		M	12.7	HS	42	L	5	81	1.7	3			LEH
1999 05 05.85		S	12.2	HS	35	L	5	158	2.2	2			HOR02
1999 05 05.89		M	12.1	HS	42	L	5	162	1.6	3			LEH
1999 05 06.53		C	15.5:	GA	60.0	Y	6	a240	0.75				NAK01
1999 05 07.52	1	C	[16.3	TJ	18.0	L	6	a 60					YOS04
1999 05 09.85		S	12.2:	HS	35	L	5	158	2.1	2			HOR02
1999 05 09.87		S	13.0	HS	44.0	L	5	156	0.6	2			HAS02
1999 05 15.88		S	12.8	HS	35	L	5	158	2	1/			HOR02
1999 05 15.90		S	13.2	HS	40.0	L	5	133	1.2	0/			BOU
1999 05 16.85		S	12.7	HS	35	L	5	158	2.0	2			HOR02
1999 05 16.87		S	12.7	AC	25.0	L	6	121	1.2	2			RES
1999 05 17.87		S	12.7	AC	25.0	L	6	121	1.2	2			RES
1999 05 17.89		B	13.4	HS	42	L	5	162	1.1	3/			LEH
1999 05 18.87		B	13.6	HS	42	L	5	162	1.0	3			LEH
1999 05 18.87		S	12.8	AC	25.0	L	6	121	1.1	2			RES

Comet 55P/Tempel-Tuttle

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 10 31.51		I	[12.5:		41	L	4	183					HAL
1997 11 28.49		I	[13.5:		41	L	4	183					HAL
1997 12 27.48		S	11.0	NP	41	L	4	72	4	3			HAL
1998 01 04.48		S	10.3	NP	41	L	4	72	5	3/			HAL
1998 01 08.49		S	9.7	NP	7.0	B		10	8				HAL
1998 01 16.07		S	8.9	NP	7.0	B		10	11	3			HAL
1998 01 17.19		S	8.9:	NP	7.0	B		10	10	3			HAL
1998 01 23.18		S	9.1:	NP	7.0	B		10	8				HAL
1998 01 29.19		S	9.2	NP	7.0	B		10	6				HAL
1998 02 13.09		S	9.2	NP	7.0	B		10	4	5			HAL
1998 02 26.01		S	9.4	NP	10.8	L	4	17	3	5/			HAL

Comet 55P/Tempel-Tuttle [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 03 20.10		I	8	:	20	L	6	49					HAL

Comet 62P/Tsuchinshan 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 03 26.14		S	13.2:	NP	41	L	4	72	2	1/			HAL
1998 03 28.16		S	13.2:	NP	41	L	4	144	2	1/			HAL
1998 03 29.13		S	13.1	NP	41	L	4	72	2	1/			HAL
1998 04 15.14		S	13.2:	NP	41	L	4	72	2	1/			HAL
1998 04 24.14		S	13.4	NP	41	L	4	144	2	1/			HAL

Comet 65P/Gunn

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 09 03.42		I	13.5:		41	L	4	183					HAL

Comet 69P/Taylor

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 01 19.23		S	13.1	WA	41	L	4	183	0.5	6			HAL
1998 01 24.31		S	13.1	WA	41	L	4	72	1	5/			HAL
1998 03 20.15		S	12.8	NP	41	L	4	72	1	3			HAL
1998 03 28.24		S	12.8	NP	41	L	4	72	1	2/			HAL

Comet 78P/Gehrels 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 08 16.44		S	12.5:	NP	41	L	4	72	1	4/			HAL
1997 09 01.45		S	12.6:	NP	41	L	4	72	1	6			HAL
1997 09 07.44		S	12.7	NP	41	L	4	183	1	5			HAL
1997 09 28.45		M	12.5	WA	41	L	4	72	1	5/			HAL
1997 10 09.45		S	12.8:	WA	41	L	4	183	1	5			HAL

Comet 81P/Wild 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 03.28		M	11.1	CA	41	L	4	72	1.5				HAL
1997 01 16.41		M	10.7	CA	41	L	4	72	3				HAL
1997 01 31.23		M	10.2	CA	41	L	4	72	3	5/			HAL
1997 02 08.28		M	10.0	CA	41	L	4	72	3				HAL
1997 03 04.21		M	9.7	CA	41	L	4	72	3	5/			HAL
1997 03 10.25		M	9.6	CA	41	L	4	72	3				HAL
1997 03 29.18		M	9.5	CA	41	L	4	72	3	6			HAL
1997 04 07.23		M	9.7	CA	41	L	4	72	2.5	5/			HAL
1997 04 29.19		M	9.7	CA	41	L	4	72	3	4/			HAL
1997 05 07.23		M	9.9	CA	41	L	4	72	2.5	5/			HAL
1997 05 25.19		S	10.5:	NP	41	L	4	72	2.5	4			HAL
1997 06 02.17		M	10.7	AC	41	L	4	72	2	4/			HAL
1997 06 29.18		S	11.3	AC	41	L	4	72	2.5	3/			HAL
1997 07 03.17		S	11.2	AC	41	L	4	72	2.5	3/			HAL
1997 07 27.15	!	S	11.6	NP	41	L	4	72	3	3			HAL

Comet 88P/Howell

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 04 21.24		I	13.5:		41	L	4	144					HAL
1998 05 29.21		I	13.0:		41	L	4	183					HAL
1998 05 30.23		I	13.5:		41	L	4	183					HAL
1998 06 14.18		S	13.3	NP	41	L	4	72	2	1			HAL
1998 06 18.21		S	13.2	NP	41	L	4	183	2	1			HAL
1998 06 28.19		S	13.2	NP	41	L	4	183	2	1/			HAL

Comet 93P/Lovas 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 10 27.08		S	[13.0	HS	35	L		80					SZA
1998 10 31.16		S	13.2	HS	27	L		214	0.7	3/			TOT03
1998 12 22.06		S	12.9	HS	27	L		120	0.5				TOT03
1999 04 19.88		B	14.3	HS	42	L	5	162	1.0	4			LEH
1999 05 05.88		B	14.4	HS	42	L	5	162	0.9	3/			LEH

Comet 94P/Russell 4

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 16.51		I	[13.5:		41	L	4	183					HAL
1997 02 10.46		I	[13.5:		41	L	4	183					HAL
1997 04 14.33		I	[13.5:		41	L	4	183					HAL

Comet 95P/Chiron

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 04 02.40		I	15.2	NP	41	L	4	183	0.0	9			HAL
1997 04 10.32		I	15.2	NP	41	L	4	183	0.0	9			HAL
1998 05 02.33		I	15.4	SC	41	L	4	183	0.0	9			HAL
1999 05 20.67		C	16.3	GA	60.0	Y	6	a120		9			NAK01
1999 06 12.55		C	16.2	TJ	18.0	L	6	a 60		9			YOS04

Comet 100P/Hartley 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 04 16.45		S	13.8	AC	41	L	4	183	1.5				HAL

Comet 103P/Hartley 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 08 04.36		I	[13.0:		41	L	4	183					HAL
1997 08 31.28		I	[13.5:		41	L	4	183					HAL
1997 09 05.22		I	[13.0:		41	L	4	183					HAL
1997 09 07.19		I	[13.5:		41	L	4	183					HAL
1997 09 23.14		I	[13.5:		41	L	4	183					HAL
1997 09 27.17		S	13.1	AC	41	L	4	183	1.0	1/			HAL
1997 10 04.17		S	13.1	NP	41	L	4	183	1.5	2			HAL
1997 10 27.12		S	11.0	AC	41	L	4	72	3	2/			HAL
1997 11 03.10		S	10.8	AC	41	L	4	72	3	3			HAL
1997 11 18.10		M	10.4	NP	41	L	4	72	3	4			HAL
1997 11 25.12		S	9.5	NP	7.0	B		10	5				HAL
1997 12 16.06		S	9.2	NP	7.0	B		10					HAL
1997 12 27.08		S	8.8	NP	7.0	B		10					HAL
1998 01 02.07		S	8.7:	NP	7.0	B		10	6	5			HAL
1998 01 17.09		S	8.8	NP	7.0	B		10	5	5/			HAL
1998 01 25.11		S	9.1	NP	7.0	B		10	5	4			HAL
1998 02 17.11		S	9.4	NP	7.0	B		10	5	3			HAL
1998 03 16.13		S	10.7	NP	41	L	4	72	4	2			HAL
1998 03 25.20		S	11.5:	NP	41	L	4	72	3	0/			HAL

Comet 104P/Kowal 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 10 27.22		I	[13.5:		41	L	4	183					HAL
1997 11 24.09		S	13.3	AC	41	L	4	72	1.5	1/			HAL
1997 12 29.11		S	13.3	AC	41	L	4	72	1.5	2			HAL
1998 01 19.12		S	12.7	NP	41	L	4	72	1.5	2/			HAL
1998 01 26.16		S	13.0	NP	41	L	4	183	1.5	2			HAL

Comet 105P/Singer Brewster

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 08.70		C	17.7	GA	60.0	Y	6	a240	0.3				NAK01

Comet 118P/Shoemaker-Levy 4

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 03.18		M	12.4	WA	41	L	4	72	1	5/			HAL
1997 01 16.37		S	12.6	WA	41	L	4	183	1	4			HAL

Comet 121P/Shoemaker-Holt 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 01 03.41		S	13.5	AC	41	L	4	183	1.5				HAL
1997 01 09.39		S	13.6	AC	41	L	4	183	1.5	2			HAL
1997 01 16.40		S	13.6	AC	41	L	4	183	1.5	2			HAL

Comet 128P/Shoemaker-Holt 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 09 29.44		I	[13.5:		41	L	4	183					HAL
1997 10 29.32		I	[14.0:		41	L	4	183					HAL
1997 11 24.24		I	[14.0:		41	L	4	183					HAL

Comet 132P/Helin-Roman-Alu 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1997 10 29.35		I	[14.0:		41	L	4	183					HAL

Comet 134P/Kowal-Vávrová

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 08.72		C	14.7:	GA	60.0	Y	6	a240	0.6		0.9m	235	NAK01
1999 06 11.67		C	14.9	TJ	18.0	L	6	a 60	0.45				YOS04
1999 06 14.66		C	15.4	TJ	18.0	L	6	a 60	0.35				YOS04
1999 07 08.64		C	15.0:	GA	60.0	Y	6	a240	0.5			230	NAK01

Comet 135P/Shoemaker-Levy 8

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 06.54		C	18.2:	GA	60.0	Y	6	a240	0.25				NAK01
1999 06 09.50		C	18.4	GA	60.0	Y	6	a240	0.3				NAK01

Comet 137P/Shoemaker-Levy 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 07 08.68		C	18.4	GA	60.0	Y	6	a240		9			NAK01

Comet 140P/Bowell-Skiff

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 18.81		B	14.7	HS	42	L	5	162	0.6	4			LEH
1999 04 19.83		B	14.7	HS	42	L	5	162	0.5	4			LEH
1999 05 01.50		C	15.1	TJ	16.0	H	3	a 60	0.6				YOS04
1999 05 03.86		B	14.8	HS	42	L	5	162	0.5	4			LEH
1999 05 05.86		B	14.9	HS	42	L	5	162	0.5	4			LEH
1999 05 07.48		C	15.5	GA	60.0	Y	6	a120	0.55			100	NAK01
1999 05 16.88		B	14.8	HS	42	L	5	162	0.6	4			LEH
1999 05 17.88		B	14.8	HS	42	L	5	162	0.6	4			LEH

Comet P/1998 U3 (Jäger)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 10 30.08		S	12.8	HS	35	L		80	1.1	2			SZA
1998 10 31.07		S	12.5	HS	27	L	6	83	0.6	2			TOT03
1998 11 11.93		S	12.0	HS	27	L	6	83	1.0	2			TOT03
1998 11 18.00		S	12.1	HS	27	L	6	83	1.0	3			TOT03
1998 12 09.90		S	11.7	HS	27	L	6	83	1.5	4			TOT03
1999 01 21.91	x	M	11.1:	HS	35	M	10	90	3	s3			DRA02
1999 01 21.96	x	B	11.3	HS	35	M	10	90	2.5	s3/			PLE01
1999 02 16.95		B	10.3	TI	6	R	6	25	2.2	7			KOU
1999 02 17.75		B	10.6	TI	6	R	6	25	2.3	7			KOU

Comet P/1998 U3 (Jäger) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 06.85		B	11.3:	TI	5.5	R	14	80	1.0	8			KAC01
1999 03 08.89		B	11.1:	TI	6	R	6	25	1.7	6/			KOU
1999 03 12.81	x	S	11.0	TT	20	R	15	75	3	s4			PLE01
1999 03 13.88		B	11.2	TI	11.4	L	4	75	1.5	8			KOU
1999 03 13.89		B	11.3	TI	11.4	L	4	75	1.2	7			KAC01
1999 03 17.35		S	11.8	HS	25.6	L	5	84	1.5	4			BIV
1999 03 18.81	x	S	11.5:	S	11.0	L	7	96	1.8	2			SAD
1999 03 23.33		S	11.8	HS	25.6	L	5	84	1.5	3			BIV
1999 04 05.33		S	12.2	HS	25.6	L	5	84	1.8	4			BIV
1999 04 08.37		S	12.5	HS	25.6	L	5	84	1.7	5			BIV
1999 04 18.79		M	11.6	TI	42	L	5	81	2.0	3			LEH
1999 04 18.85		S	12.1	AC	25.4	L	5	104	1.4	2/			MEY
1999 04 19.84		M	11.5	TI	42	L	5	81	1.9	3			LEH
1999 04 20.34		S	12.9	HS	25.6	L	5	84	1.0	4			BIV
1999 04 20.84		M	11.5	HS	42	L	5	81	1.9	3			LEH
1999 05 01.48		C	13.5	TJ	16.0	H	3	a 30	0.6				YOS04
1999 05 03.85		M	11.4	TI	42	L	5	81	1.6	3/			LEH
1999 05 03.87		S	12.0	AC	25.4	L	5	104	1.2	s2			MEY
1999 05 05.84		M	11.7	TI	42	L	5	81	1.6	3			LEH
1999 05 05.85		S	11.8	TI	35	L	5	92	2.1	3			HOR02
1999 05 06.51		C	13.3:	GA	60.0	Y	6	a120	1.3				NAK01
1999 05 07.51		C	14.0	TJ	18.0	L	6	a 60	0.65				YOS04
1999 05 07.87		S	12.0:	AC	25.4	L	5	104	1.2	2			MEY
1999 05 09.31		S	13.0	HS	25.6	L	5	84	1.3	4			BIV
1999 05 09.85		S	11.7	TI	35	L	5	92	2.1	2/			HOR02
1999 05 09.85		S	12.7	HS	44.0	L	5	156	0.3	2			HAS02
1999 05 11.32		S	13.3	HS	25.6	L	5	84	1.5	2			BIV
1999 05 12.49		C	14.0	TJ	18.0	L	6	a 60	0.65				YOS04
1999 05 15.31		S	13.3	HS	25.6	L	5	84	1.0	2			BIV
1999 05 15.87		S	11.9	TI	35	L	5	92	2.0	2/			HOR02
1999 05 16.86		M	12.1	HS	42	L	5	81	1.6	3			LEH
1999 05 17.86		S	11.5	AC	25.0	L	6	61	1.5	2/			RES
1999 05 17.87		M	12.1	HS	42	L	5	81	1.6	3			LEH
1999 05 18.86		M	12.5	HS	42	L	5	81	1.4	3			LEH
1999 05 18.86		S	11.4	AC	25.0	L	6	61	1.4	2			RES
1999 05 19.34		S	13.1:	HS	25.6	L	5	169	1.0	3			BIV
1999 06 12.28		S	13.7	HS	25.6	L	5	169	0.7	3			BIV
1999 06 13.29		S	13.8	HS	25.6	L	5	84	0.7	2			BIV

Comet P/1998 W1 (Spahr)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 06.50		C	18.5:	GA	60.0	Y	6	a240	0.25				NAK01

Comet P/1999 DN₃ (Korlević-Jurić)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 20.54		C	18.0	GA	60.0	Y	6	a240	0.25				NAK01
1999 07 07.51	a	C	17.9:	GA	60.0	Y	6	a240	0.25				NAK01

Comet P/1999 E1 (Li)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 18.84		B	14.4	HS	42	L	5	162	0.7	4			LEH
1999 04 19.79		B	14.4	HS	42	L	5	162	0.7	4			LEH
1999 05 01.47	1	C	[15.5	TJ	16.0	H	3	a 30					YOS04
1999 05 06.47		C	16.0:	GA	60.0	Y	6	a120	0.5				NAK01
1999 05 12.47	1	C	[16.3	TJ	18.0	L	6	a 60					YOS04
1999 05 20.48	x	C	16.2	HV	60.0	Y	6	a120	0.35				NAK01

Comet P/1999 G1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 06.57		C	17.7:	GA	60.0	Y	6	a240	0.3				NAK01
1999 05 07.49	1	C	[17.3	TJ	18.0	L	6	a 90			1.1m	10	YOS04

Comet P/1999 G1 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 05 13.52		C	18.1	GA	60.0	Y	6	a240	0.35	1	1.2m	11	NAK01

Comet P/1999 J5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 06 15.61		C	17.6	GA	60.0	Y	6	a240	0.3			215	NAK01
1999 07 08.58		C	17.9	GA	60.0	Y	6	a240	0.3				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; July 1998 *ICQ*, p. 160; and April 1999 *ICQ*, p. 75); recent such SOHO discoveries were reported on *IAUC* 7208, 7212, 7213, 7222, 7234, and 7256, and include comets C/1999 L5, C/1999 M1, C/1999 M2, C/1999 N1, C/1999 N3, C/1999 P2, and C/1999 S1. Another SOHO discovery that is evidently *not* a Kreutz sungrazer was C/1999 R1 (*IAUC* 7251). [This list updates that in the April 1999 issue, p. 75.]

	New-Style Designation	P	T	q	IAUC
*	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)		4/6/00	7.1	7165
*	C/1999 J3 (LINEAR)		9/20/99	0.98	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)		4/10/99	5.3	7175
*	C/1999 K3 (LINEAR)		2/27/99	1.93	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)		8/10/99	2.25	7180
*	C/1999 K7 (LINEAR)		2/25/99	2.32	7181
*	C/1999 K8 (LINEAR)		4/24/00	4.2	7182
*	C/1999 L2 (LINEAR)		8/4/99	1.90	7199
*	C/1999 L3 (LINEAR)		1/4/00	1.99	7200
*	C/1999 N2 (Lynn)		7/23/99	0.76	7222
*	C/1999 N4 (LINEAR)		5/26/00	5.49	7226
*	P/1999 P1 (Machholz 2)	5.22	12/9/99	0.75	7231
*	P/1999 RO ₂₈ (LONEOS)	6.46	10/2/99	1.23	7253
*	P/1999 R2 (Ge-Wang)	11.2	6/21/99	2.50	7255