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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 January issue (even-numbered years); the *ICQ* is also indexed in *Astronomy and Astrophysics Abstracts* and in *Science Abstracts Section A*.

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— *Proceedings*, International Workshop on Cometary Astronomy —

Due to the large amount of editing necessary with the manuscripts submitted for the *Proceedings* of IWCA I (see April issue, top of page 31), we have decided to put them off until the October issue.

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— 1995 COMET HANDBOOK —

The 1995 edition of the annual *ICQ Comet Handbook* is now available for $8.00 to *ICQ* subscribers, or for $15.00 to non-subscribers. For those subscribers who ordered it in advance, the *1995 Comet Handbook* is being mailed with this July issue of the *ICQ*.

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— Corrigendum —

• In the April issue, page 31, third paragraph, first sentence, *for* P/Metcalf-Brewington *read* comets Aarseth-Brewington $1989a_1$

TABULATION OF COMET OBSERVATIONS

New additions to the magnitude-methods (MM) key:
- q = R-band magnitude for nuclear condensation
- X = photographic — close to V
- Y = CCD magnitude with Wratten No. 15 (yellow) filter, giving response at ~ 680 nm (and blue cutoff at 520 nm)

Descriptive Information (to complement the Tabulated Data):

◇ *Comet Arend-Roland 1957 III* ⟹ 1957 May 13.91: during total eclipse of the Moon [HEN, STO01].

◇ *Comet Levy 1990 XX* ⟹ 1990 June 23.02 and 24.00: w/ 21.4-cm L (60×), coma dia. 3′, DC = 4 [BIR]. July 18.06: in 20×80 B, m_1 = 8.0 (MM: M), 3.′5 coma [MOO02]. July 23.98: in 10×50 B, m_1 = 6.6, coma dia. 6′, DC = 5 [VEN01]. July 24.90: in 10×50 B, m_1 = 6.3, coma dia. 12′, DC = 3 [VEN01]. July 25.92: in 14.0-cm f/4 T (28×), 6.′5 coma, DC = 4; in 7×50 B, m_1 = 6.7 (MM: S) [GAM01]. July 26.89: in 10×50 B, m_1 = 6.4, coma dia. 10′, DC = 4 [VEN01]. July 26.90: in 7×50 B, m_1 = 6.5 (MM: S), 12′ coma, DC = 4 [GAM01]. July 27.89: in 10×50 B, m_1 = 6.3, coma dia. 10′, DC = 4 [VEN01]. July 30.89: in 10×50 B, m_1 = 5.6, coma dia. 15′, DC = 6 [VEN01]. July 31.92: in 10×50 B, m_1 = 5.6, coma dia. 12′, DC = 4 [VEN01]. Aug. 12.95: in 10×50 B, m_1 = 5.0, coma dia. 18′, DC = 4 [VEN01]. Aug. 14.97: in 10×50 B, m_1 = 4.5; coma dia. > 20′, DC = 6 [VEN01]. Aug. 16.87: in 10×50 B, m_1 = 4.3, coma dia. 15′, DC = 5 [VEN01]. Aug. 17.94: in 10×50 B, m_1 = 4.3, coma dia. 22′, DC = 5 [VEN01]. Aug. 18.84 and 19.89: in 10×50 B, m_1 = 4.6, coma dia. 20′, DC = 5 [VEN01]. Sept. 11.78: in 10×50 B, m_1 = 4.9, coma dia. 7′, DC = 4 [VEN01].

◇ *Comet Mueller 1993a* ⟹ 1993 Nov. 19.74: coma dia. 2.′0 w/ Lumicon Swan-band filter [HAS02]. 1994 Feb. 2.09: low altitude [HAL]. June 12.35: comet at alt. ~ 11°; comparison stars ~ 15′ below comet [MOD].

◇ *Comet Mueller 1993p* ⟹ 1994 Feb. 2.08: moderately well-defined coma; altitude quite low [HAL]. Apr. 6.38: in 8×40 B, comet at threshold of visibility; clear, dark sky [SEA01]. Apr. 8.93: coma appeared elongated with small central cond. [DES01]. Apr. 10.92: no tail detected, small condensed coma; central brighter region, suggesting there has been more activity in the interim [DES01]. Apr. 11.93: "comet slightly brighter w/ Swan-band filter" [DEA]. Apr. 28.92: "comet unchanged w/ Swan-band filter" [DEA]. Apr. 29.94: "comet slightly fainter w/ Swan-band filter" [DEA]. May 3.40: in 20×80 B, m_1 ~ 10: (MM: S), 2′ coma, DC = 0 [CAM03]. May 4.43: "triple exposure of 5, 5, and 3 min showed a diffuse, roughly parabolic patch, brighter at the apex; there was no hint of the small cond. that was present on Apr. 14.34 and [then] well recorded in 1- and 2-min exposures" [A. C. Gilmore, Mount John University Observatory, New Zealand]. May 5.38 and 5.39: "a double exposure of 10 and 15 min confirmed the previous night's images: a roughly parabolic envelope or fan (~ 4′ long), brighter at the apex, with axis p.a. 150°; no hint of cond. where a 16th- to 17th-mag, reasonably-stellar cond. would have been recorded" [Gilmore]. May 5.42: tail is broad, fan-shaped, and centered at p.a. 180° [CAM03]. May 7.40: in 25.4-cm L (71×), comet elongated to S, unchanged (or a little fainter) using Swan-band filter [SEA]. May 11.38: "the comet's condensation is completely gone, and the comet is nothing more than a nebulous streak of light extending 1′ × 3′; it is strikingly similar to comet Bradfield 1992i in late May or early June 1992" [CAM03]. May 12.39: photograph exposed for 5 min using 85-mm f/2 patrol camera + hypered TP2415 film shows comet as a diffuse glow of 1′ × 3′, w/ $m_1 \simeq 11$ [CAM03]. June 2.163 and 2.170: images taken w/ Spacewatch telescope "at large airmass show a diffuse and uncondensed image with no evidence of a nuclear cond.; the diffuse coma appeared as a roughly elliptical, nearly-uniform image whose long axis is aligned from p.a. 151° to 331° and whose dimensions are $\simeq$ 3.′5 × 1.′8; m_1 ~ 10.5 for the coma; the end of the ellipse toward p.a. 331° appears sharper than the opposing edge, giving the appearance of a comet w/ a broad, diffuse tail extending ~ 4′ towards the S of the center of the elliptical image of the coma; any remaining nucleus must be fainter than mag V ~ 18.5" [R. Jedicke and SCO01]. June 5.16: "for both observation attempts [June 5 and 9], the comet was assumed to be a large, diffuse object with low surface brightness (cf. *IAUC* 5995, 6004); the altitude was low for both attempts, and on this attempt there was some interference from occasional clouds moving through the field" [HAL]. June 9.17: altitude still low, but sky conditions better than on June 5; "I didn't see anything convincing on either night, and even for a large, extremely diffuse coma, I don't think the comet could have been any brighter than m_1 ~ 12.5" [HAL].

◇ *Comet McNaught-Russell 1993v* ⟹ 1994 Mar. 15.98: poor sky, with some interference from cirrus [DES01]. Mar. 18.92: possible short fan tail in p.a. 120° [DES01]. Mar. 20.00: two 1′ spikes in p.a. 215° and 245° [DID]. Mar. 22.12: some interference from first-quarter moon; the tail was very weak, although it was also suspected in 10×50 B; in 20-cm f/6 L (55×), 0.°3 tail in p.a. 105° [HAL]. Mar. 27.93: coma suspected to be blue (very subtle) [DES01]. Mar. 30.48: TP 2415 film w/ 16-cm f/3.8 W shows 1.°42 tail in p.a. 95° [TSU02]. Mar. 30.80: disklike central cond. surrounded by wide halo; short and broad tail suspected [MEY]. Mar. 31.12: bright sky (light pollution); nevertheless, the tail, while very weak, was also suspected in 10×50 B; in 20-cm f/6 L (55×), 0.°4 tail in p.a. 80° [HAL]. Apr. 1.05: slight increase in brightness w/ Swan-band filter [SHA04]. Apr. 1.09: w/ 20-cm L (68×), coma elongated ~ 2′ toward p.a. 274° ± 3° (roughly toward the sun); at 169×, stellar cond. of mag 12.2 ± 0.3 [MOD]. Apr. 1.97: coma appeared elongated [DES01]. Apr. 2.04: w/ 32-cm L (68×), bright central region surrounded by extensive, very faint, outer halo lacking any boundaries [BOR]. Apr. 2.92: gas tail very faint [DES01]. Apr. 2.93: use of a blue filter (Wratten) reveals a central cond. with dia. 2′ [DES01]. Apr. 3.00: fan-shaped tail spans p.a. 222°-285°; definite brightening seen w/ Swan-band filter [SHA04]. Apr. 3.44: exp. taken as on Mar. 30.48 shows 0.°58 tail in p.a. 86° [TSU02]. Apr. 4.00 and 6.04: fan-shaped tail spans

(Cont. on next page)

[cont. from previous page] p.a. 240°-270°; definite brightening seen w/ Swan-band filter [SHA04]. Apr. 4.13: w/ 20-cm L (68×), fan-shaped coma subtends ~ 90°, opening to p.a. 323° ± 10°; at 169×, stellar cond. of mag 12.5 ± 0.1 [MOD]. Apr. 4.46: exp. taken as on Mar. 30.48 shows 0°.20 tail in p.a. 83° [TSU02]. Apr. 5.05: large fan coma spanning p.a. 45°-130°; two streamers at p.a. 70° and 90° [DID]. Apr. 5.05: w/ 32-cm L (68×), "Lumicon Swan-band filter enhances comet's visibility little if at all; at 110×, a vague, minute point of light at coma's center" [BOR]. Apr. 5.850: exp. w/ Foma Medix Rapid (x-ray) film and 42-cm Schmidt telescope shows 10'.3 coma elongated toward p.a. ~ 85°, DC = 8-9 (starlike central cond.) [LEH]. Apr. 5.85: weak fan-like tail; in 28-cm *f*/10 T (108×), 0°.2 tail in p.a. 100° [COM]. Apr. 5.85: "weak broad tail(?)" in p.a. 160°-210°; in 30-cm *f*/5 L (60×), tail ~ 0°.5 long in p.a. 185° [SCH04]. Apr. 6.13: the tail appeared as a broad fan; the given p.a. is for the approximate center of this fan [HAL]. Apr. 7.873: photograph taken as on Apr. 5.850 shows 4' coma, DC = 4 [LEH]. Apr. 8.06: w/ 31.7-cm *f*/6 L (55×), 8' coma, DC = 5; at 68×, "suggestion of faint but obvious nucleus; at 88× and 110×, no distinct nucleus evident, but a very vague, tiny knot of material glimpsed" [BOR]. Apr. 8.12: at 169×, fan-shaped coma subtends ~ 90°, opening to p.a. 270° ± 10°; stellar cond. of mag 12.9 ± 0.1 [MOD]. Apr. 8.80: strong central cond. [LEH]. Apr. 9.06: "circular, well-condensed coma w/ very faint outer halo whose boundaries are extremely vague" [BOR]. Apr. 9.92: coma elongated, starlike central cond. [DES01]. Apr. 14.46: exp. taken as on Mar. 30.48 shows 0°.60 tail in p.a. 73° [TSU02]. Apr. 15.05: w/ 31.7-cm *f*/6 L (68×), 4'.2 coma, DC = 5; "Lumicon Swan-band filter slightly enhances comet" [BOR]. Apr. 15.08: slight brightening w/ Swan-band filter [SHA04]. Apr. 16.08: definite brightening w/ Swan-band filter [SHA04]. Apr. 17.06: w/ 31.7-cm *f*/6 L (68×), 5'.6 coma, DC = 5; at 110×, vague nucleus suspected (mag ~ 13.5) [BOR]. Apr. 18.11: 7-day-old moon ~ 35° away; fan-shaped coma subtends ~ 60°, opening to p.a. 251° ± 10° [MOD]. Apr. 21.06: w/ 31.7-cm *f*/6 L (68×), 4'.4 coma, DC = 5; bright,,9-day-old moon in Leo [BOR]. Apr. 22.06: w/ 31.7-cm *f*/6 L (68×), 4'.6 coma, DC = 4 [BOR]. Apr. 28.86: weak central cond. [LEH]. Apr. 29.86: no stellar false nucleus [KAM01]. Apr. 29.87: comet denser w/ Lumicon Swan-band filter [MEY]. Apr. 30.47: exp. taken as on Mar. 30.48 shows 6' coma, DC = 5 [TSU02].

May 2.07: w/ 31.7-cm *f*/6 L (68×), 5' coma composed of a dense, bright region occupying 40% of total coma, surrounded by an extensive but extremely faint outer halo to a full dia. of 5'; DC = 5 [BOR]. May 3.07: w/ 31.7-cm *f*/6 L (68×), 6' coma, DC = 5; "for the first time, the coma appears to condense steadily from the edges to the center; at 110×, a very faint, central knot is suspected in the coma" [BOR]. May 3.27: comet much brighter using Lumicon Swan-band filter, showing a bright arc curving down from p.a. 10° to 160° or so; also more noticeable in Lumicon Deep-Sky "premium" filter [SPR]. May 6.08: w/ 31.7-cm *f*/6 L (68×), 6' coma, DC = 4-5; "at 110×, a vague, slightly soft, minute nucleus noted — much less well-defined than before perihelion" [BOR]. May 8.48: exp. taken as on Mar. 30.48 shows 4' coma, DC = 4 [TSU02]. May 11.08: w/ 32-cm L (68×), "coma has reverted to its bright-cond./very-faint-outer-halo form; no nucleus or minute cond. detectable" [BOR]. May 13.17: w/ 32-cm L (68×), "comet noticeably less bright than just a few days ago; coma once again condensing steadily from edges to center; Lumicon Swan-band filter enhances comet and sharpens its boundaries" [BOR]. May 14.10: in 20×80 B, coma dia. 8'.5, DC = 2; "comet really too large for de-focus range of 20×80 B; comet a threshold object w/ 10×50 B, seen only by glimpses" [BOR]. May 28.11: w/ 32-cm L (68×), "comet much fainter than previously and quite small; Lumicon Swan-band filter does not seem to affect comet's visibility" [BOR].

June 2.14: "very vague, faint object — diffuse and ill-defined at 68×" [BOR]. June 4.15: "comet just a vague smudge — barely visible — at the ephemeris position" [BOR]. June 5.24: large, diffuse and amorphous; some interference from nearby 8th-mag star [HAL]. June 7.08: morning dawn cut the observation short [GAR02]. June 7.98: w/ 20.3-cm *f*/10 T (50×), coma dia. ~ 2', DC = 0 [KAM01]. June 9.15: "comet not seen or suspected; situated only 20'-30' from comet 1994f" [BOR]. June 9.34: in telescopic field with comet 1994f [HAL].

◇ *Comet Shoemaker-Levy 1994d* ⟹ 1994 Apr. 6.22: an extremely faint candidate was suspected near the visual threshold, but could not be confirmed [HAL].

◇ *Comet Takamizawa-Levy 1994f* ⟹ 1994 Apr. 20.39: "at 164×, stellar cond. of mag ~ 14; fan-shaped coma opens to S-SW" [MOD]. Apr. 21.35: "Lumicon Swan-band filter noticeably enhances comet" [BOR]. Apr. 23.36: twilight beginning [BOR].

May 3.34: 23-day-old moon ~ 40° away [MOD] May 5.33: coma elongated toward p.a. 150° [DES01]. May 6.75: TP 2415 film w/ 16-cm *f*/3.8 W shows 3' coma, DC = 5, and 4' tail in p.a. 230° [TSU02]. May 7.34: fanlike tail spans p.a. 140°-160° [DES01]. May 7.30-7.35: at 46×, 30" central cond.; at 185×, 4' coma, DC = 6 [DID]. May 7.99: faint and wide outer halo suspected; comet enhanced w/ Lumicon Swan-band filter [MEY]. May 8.33-19.29: comet appeared fan-shaped [DES01]. May 9.43: rich star field; Veil Nebula (NGC 6992) in low-power field [HAL]. May 13.19: w/ 31.7-cm *f*/6 L (68×), 4'.1 coma, DC = 5; "comet composed of a suddenly, sharply condensed central region surrounded by a very faint outer halo; general appearance is very reminiscent of P/Tempel 1, observed a few hr earlier" [BOR]. May 14.17: "comet is last of four comets observed w/ binoculars this evening — all above the horizon simultaneously!"; in 32-cm L (68×), Lumicon Swan-band filter slightly enhances comet [BOR]. May 17.40: "comet located between two 9th-mag stars ~ 10' apart; the comet was probably somewhat brighter than the given estimate" [HAL]. May 19.66: exp. taken as on May 6.75 shows 3' coma, DC = 5, and 5' tail in p.a. 230° [TSU02]. May 20.35: "comet involved w/ asterism of stars of mag 9-10; obs. difficult; coma dia. is probably too small" [MOD]. May 22.25: in strong moonlight; comet brighter using Lumicon Deep-Sky "Premium" filter [SPR]. May 23.25: in very strong moonlight; comet slightly brighter but featureless using Lumicon Deep-Sky "Premium" filter, but almost invisible with Lumicon "Swan-band" filter [SPR]. May 28: there was an obvious inner coma 1'.2 across [KRO02]. May 29: there was an inner coma 1'.2 across; the comet was 2'.5 from a mag-11.8 star and 1'.1 from a mag-13.2 star [KRO02]. May 31.96: stellar false nucleus of mag ~ 12.5 [KAM01].

(Continued on next page...)

[cont. from previous page] *Comet Takamizawa-Levy 1994f* $\Longrightarrow$

1994 June 2.15: in 32-cm L (68×), "very vague, fairly broad tail, probably w/ a central spine near its beginning" [BOR]. June 4: the inner coma was ~ 1′ across [KRO02]. June 4.16: in 32-cm L (68×), "faint, straight tail at least 3′.5 wide — edges appear to be parallel; at 110×, bright material appears to flow out of anti-solar side of nucleus into tail – an impressive sight!" [BOR]. June 4.31 and 10.28: (36-cm L) "tail half as wide as coma" [MOD]. June 5.28: in 41-cm *f*/4 L (83×), 0°.17 tail in p.a. 135° [HAL]. June 5.33: in 35.9-cm *f*/7 L (85×), 0°.05 tail (~ half as wide as coma) in p.a. 171° ± 6° [MOD]. June 5.96: observation made during a short clearing of the sky; comet close to the limit of detection [MIL02]. June 6.21: broad, fan-shaped tail extending over 10′ [ROQ]. June 7.01: w/ 20.0-cm L (80×), coma dia. 6′.5, 0°.37 tail towards p.a. 123° [GAR02]. June 8.27: not much change in brightness when Lumicon Swan-band filter is used; there is an almost-starlike, bright 'nucleus' at 125× [SPR]. June 9.16: in 32-cm L (68×), "sharply condensed coma w/ short, stubby tail; coma perhaps teardrop-shaped in outline; tail straight w/ W edge sharper; tail probably as wide as coma's dia. and quite obvious — seeming to grow more obvious w/ increasing magnification" [BOR]. June 9.34: in telescopic field with comet 1993v; in 41-cm *f*/4 L (83×), 0°.17 tail in p.a. 100° [HAL]. June 10.14: in 32-cm L (68×), "broad tail w/ parallel edges; tonight's p.a. value possibly in error?; at 110×, center of coma has small, dense central knot containing a tiny nucleus" [BOR]. June 12.18: well-defined central cond. of mag 12.0 and dia. 13″; pronounced coma blended into a broad, divergent tail that extended for at least 5′ [ROQ]. June 22.22: small but well-defined central cond. of dia. 9″ and mag 13.3 [ROQ]. June 29.28: comet appears asymmetrical when viewed through Lumicon Deep-Sky Premium filter — and slightly more noticeable than without; no noticeable difference in ease of visibilty or appearance when viewed through Lumicon Swan-band filter [SPR].

◇ *Comet Takamizawa 1994i* $\Longrightarrow$ 1994 May 8.47: 150-sec CCD exp. w/ Spacewatch Telescope shows bright nucleus and coma extending 2′-3′; tail extends E-NE ~ 0°.2; coma saturated, no m_1 estimate possible [David Rabinowitz, Tucson, AZ]. May 8.98: coma dia. 2′.0 w/ faint halo of dia. 4′.4; coma and tail sizes measured from 60-sec clear-filter image; total magnitude measured w/ aperture of dia. 1′.3 from 60-sec *V*-filter image [PRA01]. May 9.58: w/ 25×100 B, comet small and condensed; less visible in Swan-band filter [SEA]. May 9.90: w/ 20-cm *f*/2 Baker-Schmidt camera + *V* filter + ST-6 CCD, very condensed coma seen [MIK]. May 10.25: w/ 20-cm *f*/8 L (46×), m_1 ~ 9.6, 3′ coma, DC = 3; "10th-mag stellar false nucleus w/in a bright central cond., at the following edge of a fairly bright coma" [DID]. May 11.21: "bright central cond. at the N edge of a fan coma that is extended S-ward" [DID]. May 11.96: condensed object with stellar false nucleus of mag ~ 12.5 [KAM01]. May 12.01: starlike central cond. suspected; no enhancement w/ Lumicon Swan Band Filter [MEY]. May 12.48: photograph exposed for 3 min using 85-mm *f*/2 patrol camera + hypered TP2415 film shows comet with strong cond. and faint outer 1′ coma w/ $m_1 \simeq 10$ [CAM03]. May 13.14: in 20×80 B, "faint, weakly-condensed coma possibly w/ some sort of extensions toward the N; in 32-cm L (88× and 110×), tiny, quite sharp nucleus of mag ~ 12 — well separated from surrounding material; Lumicon Swan-band filter has no effect on comet's visibility" [BOR]. May 13.56: very condensed in 25.4-cm L at 71× and 114× [SEA]. May 14.15: at 68×, comet is "a rather strange looking object consisting of a very diffuse outer coma, which is suddenly very sharply condensed near the center; area of greatest central cond. seems somewhat offset W of coma's center; at 110×, a stellar or nearly-stellar nucleus is noted" [BOR]. May 14.24: w/ 35.9-cm *f*/7 L (85×), DC = 5; at 164×, stellar central cond. of mag 12-13 [MOD]. May 15.57: sharp central cond. [SEA]. May 16.25: well-defined central cond. w/ hint of coma asymmetry [ROQ]. May 17.37: "bright cond., located off-center toward leading edge of sharply defined fan-shaped coma" [HAL]. May 19.63: TP 2415 film w/ 16-cm *f*/3.8 W shows 3′.5 coma, DC = 5, and 21′ tail in p.a. 65° [TSU02]. May 28.13: moon (3 days past full) rose during obs.; "at 110×, a strong and distinct nucleus of mag ~ 12.0 is very similar in brightness and sharpness to that in P/Tempel 1, seen only a few min earlier" [BOR]. May 28.95 and 29.97: central condensed disk [SHA02]. May 31: comet was close to a 13th-mag star; the nuclear cond. was nearly stellar and similar in brightness to that star [KRO02].

June 2.97: comet very faint and diffuse [DES01]. June 3.97: very faint candidate suspected, but not confirmed [DES01]. June 4.14: "at 68×, area of greatest central cond. is slightly offset toward N-NW; at 110×, fairly sharp nucleus of mag ~ 12.5 w/in a small but strongly condensed knot of bright material" [BOR]. June 4.14: at 68×, coma elongated toward p.a. 181° ± 10° [MOD]. June 8.28: no change in comet's visibility when using Lumicon Swan-band filter [SPR]. June 9.14: "Lumicon Swan-band filter has no effect on comet's visibility; at 110×, stellar or nearly-stellar nucleus of mag ~ 13.0 at the apex of a fan of bright material opening essentially toward the E" [BOR]. June 10.46: in 25.4-cm L (71×), sharp central cond. of mag ~ 12.5 [SEA]. June 12.16: well-defined central cond. of dia. 11″ and mag 12.6 [ROQ]. June 15.27: fairly low altitude; mediocre sky conditions [HAL]. June 22.19: well-defined central cond. of mag 13.2 and dia. 12″ [ROQ].

◇ *P/Encke* $\Longrightarrow$ 1993 Dec. 11.77: w/ 25-cm *f*/6 L (75× and 150×), comet not detected (fainter than total mag 12) [REN]. 1994 June 14.454: "second sunward spike" extends 0′.99 in p.a. 58° [SCO01].

◇ *Periodic Comet Helin-Lawrence (1993l)* $\Longrightarrow$ 1994 May 2.805: 190-sec CCD exposure w/ 1.0-m L in twilight shows tail of length 110″ in p.a. 250° [R. H. McNaught, G. J. Garradd, and D. I. Steel, Siding Spring Observatory, New South Wales].

◇ *P/Kojima (1992z)* $\Longrightarrow$ 1994 June 14.18: "object diffuse and difficult to measure" [SCO01].

◇ *Periodic Comet Kushida (1994a)* $\Longrightarrow$ 1994 Feb. 3.50: considerably enchanced using Swan-band filter [SEA]. Feb. 7.50: "very considerably enchanced" using Swan-band filter [SEA]. June 13.19: faint, narrow tail [SCO01].

◇ *P/Reinmuth 2 (1993g)* $\Longrightarrow$ 1994 June 9.44: brief search conducted as dawn was beginning [HAL].

◇ *Periodic Comet Russell 2 (1994e)* $\Longrightarrow$ 1994 June 12.23: very faint tail extends ~ 0′.14 [SCO01].

◇ *Periodic comet Russell 2 (1994e)* ⟹ 1994 June 12.23: very faint tail extends ~ 0′.14 [SCO01].

◇ *P/Schwassmann-Wachmann 1* ⟹ 1994 Feb. 10.31: "a very faint candidate was suspected, but some faint stars located close to the comet's expected position prevented confirmation; the comet clearly was not as bright as it was during Jan." [HAL]. Feb. 13 and 16.88: "photographic observations made with Agfaortho 25 film — hypersensitized by ammonia vapor — and yellow filter, provides values very close to the standard photoelectric *V* [new code 'X' — Ed.]; exposures were of 14 and 20 min (respectively)" [MIL02]. Mar. 6.22: rich star field [HAL]. Mar. 10.19: very vague and diffuse [HAL]. Mar. 12.15: comet suspected at $m_1 = 14.4$ (coma dia. 0′.45, DC = 1) [MOD]. Apr. 6.18: rich star field; an extremely faint candidate was suspected [HAL]. Apr. 29.47: w/ 25-cm *f*/6 L + CCD, $m_1 = 12.5$, comet slightly diffuse but almost stellar [T. Kojima, YGCO Chiyoda Observatory, Japan]. May 6.48: obs. made as on Apr. 29.47, $m_1 = 13.5$, coma dia. 0′.9, fan-shaped coma extended to the NW [Kojima]. May 6.48: fan-shaped coma extends in p.a. 65°-245° [NAK01]. May 12.47: fan-shaped coma extends in p.a. 60°-285° [NAK01].

◇ *Periodic Comet Schwassmann-Wachmann 2* ⟹ 1993 Dec. 11.04: w/ 25-cm *f*/6 L (75× and 150×), comet not detected ($m_1 > 12.7$) [REN]. 1994 Mar. 6.838: in a 15-min exposure made with a 20-cm *f*/4 L on hypered Agfaortho 25 film, the comet appears well condensed; the 2′ main tail is in p.a. 112°; a 0′.5 jet-like feature is in p.a. 90°; there is a possible 1′.3 anti-tail in p.a. 292°; the coma is slightly fan-shaped toward p.a. 190° [MIL02]. Mar. 9.90: limiting mag of stars = 14.2 [REN]. May 3.89: w/ 20-cm *f*/2 Baker-Schmidt camera + *V* filter + ST-6 CCD, fan-like tail visible [MIK].

◇ *P/Shoemaker-Levy 9 (1993e)* ⟹ 1994 Jan. 8.85: fragments oriented in p.a. 64°-244°; magnitude of each fragment (10″ × 10″ box) → G, 18.8; H, 19.1; K, 18.8; L, 19.0; Q, 18.7; R, 19.3; S, 19.6 [NAK01]. Jan. 15.84: fragments oriented p.a. 63°-243°; magnitude of each fragment (10″ × 10″ box) → G, 19.1; H, 19.2; K, 19.2; L, 19.3; Q, 18.7; R, 19.3; S, 19.3 [NAK01]. Feb. 18.47-Apr. 17.27: "assumed coma dia. is roughly equivalent to a 2′ × 1′ elliptical coma" [MOD]. Feb. 10.47: "due to the unusual appearance of this comet, the limiting brightness (for all observation attempts) is more uncertain than it would be for a more 'typical' comet; the comet was assumed to be a long narrow streak; the position specifically observed was that calculated for nucleus Q_1 = 7a" [HAL]. Mar. 15.73: fragments oriented p.a. 61°-241°; magnitude of each fragment (10″ × 10″ box) → G, 18.6; H, 19.0; L, 19.0; Q, 18.4; R, 19.3; S, 19.0 [NAK01]. Apr. 13.73: fragments oriented p.a. 63°-243°; magnitude of each fragment (10″ × 10″ box) → G, 18.7; H, 19.0; K, 18.8; L, 19.1; Q, 18.4; R, 19.6; S, 19.5 [NAK01]. May 8.65: fragments oriented p.a. 63.5°-243.5°; magnitude of each fragment (10″ × 10″ box) → E, 19.4; G, 18.4; H, 18.6; K, 18.6; Q, 18.1; R, 19.3; S, 19.1; T, 19.6; W, 19.3 [NAK01]. May 16.65: fragments oriented p.a. 64°-244°; magnitude of each fragment (10″ × 10″ box) → E, 19.4; G, 18.5; H, 18.9; K, 18.7; L, 18.8; P, 18.9; Q, 18.3; R, 19.5; S, 19.2 [NAK01]. June 1.55: fragments oriented p.a. 64°-244°; magnitude of each fragment (10″ × 10″ box) → F, 19.6; G, 18.7; H, 19.0; K, 18.9; Q, 18.3; R, 19.1; S, 18.7; W, 19.7 [NAK01].

◇ *Periodic Comet Tempel 1 (1993c)* ⟹ 1994 Mar. 22.39: at 164×, stellar cond. of mag 13.7 ± 0.1; coma elongated ~ 0′.5 in p.a. 245° ± 15° [MOD]. Mar. 30.86: no enhancement w/ Lumicon Swan-band Filter [MEY]. Apr. 4.33: elliptical coma w/ minor axis of 0′.4; coma elongated toward p.a. 201° ± 5°; at 164×, stellar cond. of mag 13.6 ± 0.1 at NE tip of coma [MOD]. Apr. 7.916: exp. w/ Foma Medix Rapid (x-ray) film and 42-cm Schmidt telescope shows 1′.6 coma elongated toward p.a. ~ 226°, DC = 4 [LEH]. Apr. 8.10: "small, strongly condensed coma; at 88× and 110×, coma contains a dense, central region w/ an unusually distinct, sharp, bright, stellar or nearly-stellar nucleus of mag ~ 13.0" [BOR, who also notes that he observed this comet in 1994 "with the same instrument and comparison-star sequence as during its 1982 apparition"]. Apr. 8.34: elliptical coma w/ minor axis of 0′.5; coma elongated toward p.a. 195° ± 5°; at 164×, stellar cond. of mag 13.5 ± 0.1 at N-NE tip of coma [MOD]. Apr. 9.10: "coma suddenly sharply condensed very near the center; central region very bright and obvious, relative to the rest of coma; at 110×, the 'nucleus' is less sharp than at 68×, but very bright; $m_2 = 12.5$ (ref: AC, U Vir sequence)" [BOR]. Apr. 10.98: w/ 50.0-cm *f*/10 telescope (166×), fan-shaped coma toward p.a. 135°-180°; suspected short tail in blue filter (Wratten) in p.a. 135°.5; dia. 2′.5; at 333×, small and circular off-center cond. with dia. 1′ [DES01]. Apr. 14.83: "central cond. prominent, more stellar" [COO01]. Apr. 15.09: at 130×, stellar false nucleus of mag 12 [DID]. Apr. 17.12: "Lumicon Swan-band filter causes no change in comet's visibility; $m_2 = 12.5$ (ref: AC, U Vir sequence)" [BOR]. Apr. 17.33: (36-cm L) elliptical coma w/ minor axis of 0′.8; coma elongated toward p.a. 215° ± 5°; stellar cond. of mag 13.0 ± 0.5 near NE tip of coma [MOD]. Apr. 18.33: w/ 35.9-cm *f*/7 L (164×), "coma elongated (tail?) toward p.a. 198° ± 5°; stellar cond. of mag 13.5 ± 0.1 near N-NE tip of coma" [MOD]. Apr. 19.91: weak central cond. [LEH]. Apr. 20.31: elliptical coma w/ minor axis 1′.2 [MOD]. Apr. 29.90: condensed object, stellar false nucleus of mag ~ 12.5 [KAM01]. Apr. 30.91 and May 2.90: difficult observation — comet close to ϵ Vir [SCH04].

May 1.25: "comet brighter and more condensed using Lumicon Deep-Sky 'Premium' filter" [SPR]. May 2.10: "comet ≃ 10′ from 3rd-mag star ϵ Vir, but comet is still obvious; star put just outside edge of field for obs." [BOR]. May 2.88: comet near ϵ Vir; Lumicon Swan-band Filter weakens comet [MEY]. May 3.08: "coma elongated more-or-less N-S, w/ area of greatest cond. offset well N of center; amazingly intense nucleus is situated at N apex of narrow fan of bright material" [BOR]. May 3.20: fan-shaped coma opens to p.a. 184° ± 8° [MOD]. May 3.26: comet much more condensed using Lumicon Deep-Sky "Premium" filter, but almost invisible in Lumicon Swan-band filter [SPR]. May 3.41: "comet diffuse and diffcult to observe, due to close promixity to ϵ Vir" [CAM03]. May 4.12: w/ 25-cm *f*/20 'tri-schiefspiegler' (105×), $m_1 = 11.3$ (MM: B; ref: AA), 2′ coma, DC = 4 [NOW]. May 4.54: w/ 25×100 B, comet possibly a little brighter with Swan-band filter, "but only marginally" [SEA]. May 5.41: "comet's central cond. seems sharper than yesterday" [CAM03]. May 6.08: "area of greatest cond. not as sharp and well-defined at 110× as previously, and rather less stellar-

(Cont. on next page)

[cont. from previous page] looking; coma slightly elongated N-S w/ cond. offset slightly to N" [BOR]. May 7.91: starlike central cond. [MEY]. May 8.10: in binoculars, comet appeared fan-shaped [DES01]. May 11.10: "at 68×, coma elongated N-S, but at 110×, it looks more fan-shaped, opening to the S; false nucleus fairly strong, but not at all as well-defined as previously" [BOR]. May 11.93: comet significantly brighter and larger [KAM01]. May 12.42: "photograph exposed for 3 min using 85-mm *f*/2 patrol camera + hypered TP2415 film shows comet as a diffuse 2′ glow w/ some indication of cond. and $m_1 \simeq 10$" [CAM03]. May 12.95: comet involved w/ star of mag 10 [MEY]. May 12.97: comet very close to star of mag 10 [SCH04]. May 13.26: at 68×, coma elongated toward p.a. 241° ± 7° [MOD]. May 14.11: "in 20×80 B, comet is visible as a small knot of nebulosity w/ a dense central region and ~ 3′.5 in dia.; it is in close proximity to a 7th-mag star, preventing useful m_1 estimate; in 32-cm L (110×), area of greatest cond. contains a small, dense knot of material perhaps 0′.1 in size (mag ~ 12), from which flows a fairly narrow fan of bright material directed toward the S" [BOR]. May 17.02: coma elongated with bright cond. [DES01]. May 28: was ~ 1′ from a mag-10.5 star [KRO02]. May 28.12: "Lumicon Swan-band filter does not affect comet's visibility; at 110×, a stellar or nearly-stellar nucleus of mag ~ 12.0 is situated at the apex of a fan of bright material directed roughly SE-ward; nucleus very distinct relative to the surrounding bright material" [BOR]. May 29.90: comet elongated [DES01]. May 30.15: "at 110×, the nucleus, which was very prominent two nights ago, is now just glimpsed (m_2 ~ 13.5); it is heavily involved w/ surrounding bright material" [BOR]. May 31: was 2′.2 from a mag-9.4 star [KRO02]. May 31.91: stellar false nucleus of mag ~ 13 [KAM01].

June 2.13: "Lumicon Swan-band filter very slightly enhances comet; at 110×, tiny, not-quite-stellar, rather distinct, sharp nucleus of mag ~ 13; apparently significantly more bright material lies to the SE of nucleus than elsewhere" [BOR]. June 3.12: "at 68×, area of greatest cond. slightly offset N-NW w/in coma; at 110×, tiny stellar nucleus of mag ~ 13; more bright material lies S-SE of nucleus than elsewhere; coma elongated roughly toward p.a. 160°" [BOR]. June 4.13: "coma elongated toward p.a. 160°-340°, w/ area of greatest cond. offset toward p.a. 340°; coma progressively growing less condensed w/ passage of days; at 110×, m_2 ~ 13.5" [BOR]. June 7.92: stellar false nucleus of mag ~ 13.5 [KAM01]. June 9.13: "at 68×, coma less condensed than at last obs.; at 110×, nucleus is near limit of detection at mag ~ 13.5" [BOR]. June 9.19: well-defined 11″-diameter central cond. [ROQ]. June 13.17: small, central cond. of dia. 8′ and mag 13.8; asymmetrical coma that blended into an indistinct tail-like structure [ROQ]. June 15.29: low altitude, mediocre sky conditions; some interference from nearby 8th-mag star [HAL]. June 22.17: strong moonlight; CCD camera coupled with a Wratten No. 15 filter ("a combination that gives a maximum response at ~ 680 nm, and a blue cutoff at 520 nm") showed a well-defined central cond. of mag 13.5 and dia. 14″ [ROQ]. June 26.19: central cond. was well defined with dia. ~ 10″ and mag 13.9; coma was strongly asymmetrical and could be traced to ~ 1′.5 from the central cond. [ROQ].

◇ *Periodic Comet Tuttle (1992r)* ⟹ 1994 Apr. 6.12: low altitude [HAL].

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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; "MM" = the method employed for estimating the total visual magnitude [B = Bobrovnikoff, M = Morris, S = Sidgwick/In-out — see October 1980 issue of *ICQ*, pages 69-73 — etc.; also, P stands for photographic magnitude, and photoelectrically-determined values fall under U, L, and V for the standard *U*, *B*, and *V*, respectively]. "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 (B = Bobrovnikoff, M = Morris, S = Sidgwick, C = unfiltered CCD integration, c = same as 'C', but for nuclear magnitudes, V = electronic observations — usually CCD — with Johnson *V* filter, *etc.*; see pages 98-100 of the October 1992 issue, and page 60 of the April 1993 issue, 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).

"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; 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. "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).

An asterisk between the published DATE and MM columns indicates that the observation is an updated version of one already published in a previous issue of the *ICQ*, *The Comet Quarterly*, or *The Comet*. 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 then only for situations where the observed comet is at altitude > 10°. Here again are the new special symbols: '&' = 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.

A complete list of the Keys to abbrevations used in the *ICQ* is available from the Editor for $4.00 postpaid. *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 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.

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Key to observers with observations published in this issue, *with 2-digit numbers between Observer Code and Observer's Name indicating source [07 = Comet Section, British Astronomical Assn.; 11 = Dutch Comet Section; 16 = Japanese observers (c/o Akimasa Nakamura, Kima, Japan); 23 = Czech group (c/o P. Pravec); 32 = Hungarian group (c/o K. Sarneczky); etc.]. Those with asterisks (*) preceding the 5-character code are new additions to the Observer Key:*

CODE	S	OBSERVER, LOCATION
ALC	07	G. E. D. Alcock, England
AUG		Todd Augustyniak, IL, U.S.A.
BAK01	32	Gaspar Bakos, Budapest, Hungary
BAR		Sandro Baroni, Italy
BAR06	26	Alexandr R. Baransky, Okhnovka, Ukraine
BEA	07	Sally Beaumont, England
BIR	07	P. Birtwhistle, England
BOR		John E. Bortle, NY, U.S.A.
BOU		Reinder J. Bouma, The Netherlands
*BRI03	07	Steve Brincat, Malta
BRO04	27	Eric Broens, Belgium
CAM03	14	Paul Camilleri, Australia
CAN	07	Michael P. Candy, Australia
CAV		Marco Cavagna, Italy
COL01	07	E. H. Collinson, England
COM	11	Georg Comello, The Netherlands
*COO02		Tim P. Cooper, South Africa
CSU	32	Matyas Csukas, Salonta, Romania
DEA		Vicente Ferreira de Assis Neto, Brazil
DEM	23	Eduard Demencik, Slovak Republic
DES01	35	Jose Guilherme de Souza Aguiar, Brazil
DID		Richard Robert Didick, MA, U.S.A.
DIE02	27	Alfons Diepvens, Belgium
DIN	07	C. Dinwoodie, Scotland
DVO	23	Denisa Dvorakova, Czech Republic
FAB	23	Peter Fabian, Prievidza, Slovak Republic
FEI	11	Henk Feijth, The Netherlands
FIE		Marsilio Fierimonte, Italy
*FIS	07	Daniel Fischer, Germany
FOL	32	Ferenc Foldesi, Veszprem, Hungary
FRA01	07	James Fraser, Scotland
*GAM01	07	A. Gambin, Malta
GAR02		Stephane Garro, France
GLA	32	Gabor Glasz, Kornye, Hungary
*GRZ		Piotr Grzywacz, Lodz, Poland
HAD01	32	Csaba Hadhazi, Hajduhadhaz, Hungary
HAL		Alan Hale, U.S.A.
*HAL04	23	Karel Halir, Czech Republic
HAM	07	A. R. Hamilton, England
HAR05	07	Clive H. Hare, England
HAS02		Werner Hasubick, Germany
HEN	07	Michael J. Hendrie, England
HOL02	07	F. M. Holborn, England
HOR02	23	Kamil Hornoch, Czechoslovakia
*HOU01	07	N. M. Hougenhaut, South Africa
HUR	07	Guy M. Hurst, England
ITO02	16	Kazuyuki Ito, Japan
JON04	32	Karoly Jonas, Budapest, Hungary
KAM01		Andreas Kammerer, Germany
KAM03	16	Toshiyuki Kamijima, Japan
KEI	07	Graham Keitch, England
KES01	32	Sandor Keszthelyi, Pecs, Hungary
KID	07	Mark Kidger, Canary Islands
KIS02	32	Laszlo Kiss, Szeged, Hungary
KOB01	16	Juro Kobayashi, Japan
KOC03	32	Antal Kocsis, Balatonkenese, Hungary
KON03	16	Eitoshi Konno, Japan
KOR		Stefan Korth, Germany
KOS	07	Attila Kosa-Kiss, Salonta, Romania
KRO02		Gary W. Kronk, IL, U.S.A.
KRY01		Timur Valer'evich Kryachko, Russia
KUB	23	Pavel Kubicek, Czech Republic
*KUC01	23	Jan Kucera, Czech Republic
KUJ	23	Josef Kujal, Czech Republic
KYS	23	J. Kysely, Czech Republic
*LAN03	07	James Lancashire, Cambridge, England
LEH		Martin Lehky, Czechoslovakia
LOO01		Frans R. van Loo, Belgium
LOU	35	Romualdo Lourencon, Brazil
MAR03	07	Brian G. Marsden, England
MAR14	07	Harold Martin, England
MER02	07	G. Merton, England
MEY		Maik Meyer, Germany
MIK		Herman Mikuz, Slovenia
MIL02		Giannantonio Milani, Italy
MIZ01	.	Attila Mizser, Budapest, Hungary
MOD		Robert J. Modic, OH, U.S.A.
MOE		Michael Moeller, Germany
*MOO02	07	David Moore, Ireland
*MOR06	16	Masayuki Moriyama, Japan
NAG02	16	T. Nagata, Japan
NAK01	16	Akimasa Nakamura, Japan
NES		Yurij V. Nesterov, Russia
NOW		Gary T. Nowak, VT, U.S.A.
*NZA	07	New Zealand Antarctic Expedition, Scott Base
OHK	16	Masami Ohkuma, Japan
*OHM	16	Fumihiko Ohmori, Japan
OLE	18	Arkadiusz Olech, Poland
OSV	32	Laszlo Osvald, Veszprem, Hungary
PAN	05	Roy W. Panther, England
PIO	18	Tomasz Piotrowski, Poland
*POR03	32	Zsolt Porhanda, Kecskemet, Hungary
PRA01	23	Petr Pravec, Czech Republic
PRI03	35	Walter Prini, Jr., Brazil
REN		Alexandre Renou, France
ROQ		Paul Roques, AZ, U.S.A.
SAN03		Sang Ho Cho, South Korea
SAR02	32	Krisztian Sarneczky, Budapest, Hungary
SCH04	11	Alex H. Scholten, The Netherlands
SCH05	07	Patrick Schmeer, Germany
*SCH12	07	Richard W. Schmude, Jr., TX, U.S.A.
SCO01		James V. Scotti, AZ, U.S.A.
SEA	14	David A. J. Seargent, Australia
SEA01	14	John Seach, Australia
SHA02	07	Jonathan D. Shanklin, England
SHA04		Gregory T. Shanos, U.S.A.
SKA01	23	Petr Skalak, Czech Republic
SOW	16	Toshihide Sowa, Japan
SPR		Christopher E. Spratt, BC, Canada
SPU	23	Miroslav Spurny, Czech Republic
STE06	07	W. H. Steavenson, England
STE10	23	Petr Stepan, Czech Republic
STO01	07	G. E. Stone, England
SZA	32	Sandor Szabo, Sopron, Hungary
SZA02	32	Levente Szarka, Kecskemet, Hungary
SZA03	32	Agoston Szauer, Papa, Hungary
SZE02	32	Laszlo Szentasko, Budapest, Hungary
TAY	05	M. D. Taylor, England
TAY02	07	G. E. Taylor, England
*THO05	07	I. L. Thomsen, New Zealand
TOT02	32	Krisztian Toth, Dunakeszi, Hungary
TSU02	16	Mitsunori Tsumura, Japan
UJV		Antal Ujvarosy, Hungary
VAN04	27	Tony VanMunster, Belgium
VEN01	07	F. Ventura, Malta
VET01	23	Marie Vetrovcova, Czech Republic
VIC	32	Zoltan Vician, Hehalom, Hungary
VIN	07	A. W. and P. H. Vince, England
VOG		Matthew Vogel, IL, U.S.A.
WAT	07	R. L. Waterfield, England
WAT01	16	Nobuo Watanabe, Japan
WIE	32	Krisztian Wieszt, Dag, Hungary
ZAN01	11	W. T. Zanstra, The Netherlands
ZNO	23	Vladimir Znojil, Czech Republic

Comet Arend-Roland 1957 III

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1956 11 22.76	O	10 :	BD	75	L		140	0.6	7	0.1	60	STE06
1956 11 24.83	P	10 :	BD	6	A			1.5	5			HEN
1956 11 28.95	S	9.5	BD	10	R		25	3				CAN
1956 11 29.00	S	10 :	BD	10	R		60					TAY02
1956 11 29.90	S	9.5	BD	16	R		50	1	4	0.1	45	VIN
1956 12 02.90				30	L		87		8	0.1	85	HOL02
1956 12 05.82	S	9.3	S	20	L		36	1	8	0.1	56	PAN
1956 12 24.75	S	9.2	S	20	L		36	2.5	2	0.1	23	PAN
1956 12 30.76	O	9.5	BD	15	R		80			0.1	60	WAT
1956 12 30.81	S	8.9	S	20	L		36	3	2	0.1	52	PAN
1956 12 31.90	S	9.5	BD	15	R		80					WAT
1957 01 06.78	S	8.6	S	20	L		36	4.5	2	0.2	45	PAN
1957 01 17.76	S	8.9	S	20	L		36	3	2	0.1	53	PAN
1957 01 26.78				20	L		36	2.5	2	0.1	64	PAN
1957 01 26.82	S	8.5	BD	15	R		130	1	5	0.5	50	WAT
1957 01 26.90	S	9.0	BD	7	R		30	2.5	1			STO01
1957 01 27.80	S	8.7	BD	7	R		30	2.5	1			STO01
1957 01 27.81				20	L		36	2.5	2	0.1		PAN
1957 01 27.90	S	8.5	BD	15	R		80					WAT
1957 02 01.80				20	L		36	2.5	2	0.1	31	PAN
1957 02 03.78	S	7.5	Y	15	R		80					WAT
1957 02 06.80	S	8.0	HR	6	R		30	3				STO01
1957 02 17.80	S	7.4	BD	6	R		30	3.5		0.2	62	STO01
1957 02 25.80	S	6.0	BD	6	R		30	4				STO01
1957 04 06.80	O	3.5		0.0	E		1			4	185	NZA
1957 04 12.20		1 :		0.0	E		1					HOU01
1957 04 12.75		-1 :		0.0	E		1					THO05
1957 04 13.75		-0.5		0.0	E		1					THO05
1957 04 20.81	O	0	BD	4	R					1	10	CAN
1957 04 21.17	S	0 :		5	R		12	2				HEN
1957 04 21.85		-1 :		0.0	E		1			1		WAT
1957 04 21.85	S	1 :		0.0	E		1			7	0	COL01
1957 04 23.89	S	2.5	SP	20	L		36	17		12		PAN
1957 04 23.90	S	2.5	SP		B					15	0	VIN
1957 04 23.92				0.0	E		1			10		CAN
1957 04 24.87				0.0	E		1	25		11		HAR05
1957 04 24.90				0.0	E		1			10		TAY02
1957 04 24.90		1 :		0.0	E		1			20		MER02
1957 04 25.10		0.2	SP	0.0	E		1			15	15	DIN
1957 04 25.15	0	1.5	SP	0.0	E		1			5		HEN
1957 04 26.93	S	2.0	SP	7	R		40			30		MAR14
1957 04 27.90		0.5	SP	0.0	E		1			12		MAR03
1957 04 27.90		1.5	SP	0.0	E		1			10		MER02
1957 04 27.90		1.5	SP	0.0	E		1			10		TAY02
1957 04 27.90		2.0	SP	0.0	E		1			20	30	STO01
1957 04 27.92				4.0	B		8			10	26	PAN
1957 04 27.92				6	R		36	15		9		HAR05
1957 04 27.92	S	1.9	SP	2	R		10					MAR14
1957 04 28.90		1.7	SP	0.0	E		1			11		MAR03
1957 04 28.90		1.8	SP	0.0	E		1			8		MER02
1957 04 28.92				0.0	E		1	6		11	43	PAN
1957 04 28.93		1.9	SP	0.0	E		1	12		16	45	HAM
1957 04 29.10	S	2.3	SP	6	R		30	6				STO01
1957 04 29.90	O	3.1	SP	0.0	E		1			8		TAY02
1957 04 29.90	S	2.4	SP	6	R		30	6	7	20		STO01
1957 04 29.96	S	3.0	SP	7	R		40			15		MAR14
1957 04 30.90		3 :		0.0	E		1			8		TAY02
1957 05 03.00	S	3.9	SP	4	R		8			7	47	PAN
1957 05 05.90	S	3.2	SP	6	R		30			4		STO01

Comet Arend-Roland 1957 III [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1957 05 13.91	P	4.8	SP	6	A			4		7	70	HEN
1957 05 13.91	S	4.5	BD	7	R		30	5		3		STO01
1957 05 18.90	S	5.1			B							ALC
1957 05 18.90	S	5.5		16	R		50			0.5		VIN
1957 05 19.00	O	5 :	SP	0.0	E		1			4		MAR03
1957 05 20.00	S	5.4	BD	6	R		30	5		1.5		STO01
1957 05 22.89	P	6.0	BD	6	A			2	8	4	70	HEN
1957 05 22.95	S	6.2	SP	4.0	B		8			1.5		PAN
1957 05 23.00	S	5.9	BD	6	R		30	3				STO01
1957 06 05.01	S	6.7	S	4.0	B		8	4		0.3	92	PAN
1957 08 02.99	P	11 :		15	A							WAT

Comet Bradfield 1974 III

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1974 05 30.00	* S	10.9	HS	20.0	R	14	40	2.0	2			SHA02

Comet Suzuki-Saigusa-Mori 1975 X

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1975 10 23.8	S	6.5:	S	14	R	14	67					SHA02

Comet Bradfield 1975 XI

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1976 01 23.75	S	10.7	HS	20	R	14	40		2			SHA02
1976 01 27.77	S	11.8	HS	20	R	14	40		2			SHA02
1976 01 29.77	S	12.6	HS	20	R	14	40		1/			SHA02
1976 01 30.77	S	12.6	HS	20	R	14	40		1			SHA02

Comet West 1976 VI

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1976 06 20.96	S	11.2	HS	32	R	18	95		2			SHA02
1976 06 23.02	S	11.9	HS	32	R	18	95		1			SHA02

Comet Meier 1978 XXI

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1978 05 09.91	* S	10.9	HS	32.0	R	18	97	4.0	5		90	SHA02
1978 05 24.92	* S	11.1	HS	32.0	R	18	95	2	5			SHA02

Comet Bradfield 1979 VII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1979 08 22.10	S	11.7	HS	20	R	14	40	3	2			SHA02

Comet Austin 1982 VI

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1982 08 18.80	S	5.4	A	5.0	B		7	4	7	1.3	20	KES01
1982 08 23.81				10.6	R	6	60			&0.25	50	KES01
1982 08 23.81	S	5.3	A	5.0	B		7	7	6			KES01
1982 08 26.81	S	5.5	A	10.6	R	6	60	5	5	0.6	60	KES01

Comet IRAS-Araki-Alcock 1983 VII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1983 05 07.90	S	5.4	A	5.0	B		7	22	3			KES01

Comet IRAS-Araki-Alcock 1983 VII [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1983 05 10.90	S	1.0		5.0	B		7	95	5			KES01
1983 05 11.92	&	1 :		0.0	G		1	30	1/			KES01
1983 05 12.82	& S	4.5	A	5.0	B		7	15	1/			KES01

Comet Austin 1984 XIII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1984 09 08.10	& S	8.8	AC	10.6	R	6	24	4	5	0.6	300	KES01

Comet Levy-Rudenko 1984 XXIII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1984 12 11.73	S	9.0		10.6	R	6	24	3	1			KES01
1984 12 12.70	S	9 :	AC	10.6	R	6	24	3.5	2			KES01

Comet Hartley-Good 1985 XVII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1985 10 12.76	S	8.5	AA	10.6	R	6	24	11	1			KES01
1985 10 13.77	S	8.0	AA	10.6	R	6	24	12	2			KES01
1985 10 18.78	S	8.0	AA	10.6	R	6	24	7	3			KES01
1985 10 28.74	S	7.5	AA	10.6	R	6	24	4	4			KES01

Comet Okazaki-Levy-Rudenko 1989 XIX

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1989 09 23.79	S	9.4	AC	20	L		20	2.5	5			SZA
1989 09 24.78	S	9.0:	AC	20	L		20	2	3			SZA
1989 10 01.79	S	8.0	AC	6.3	R	13	21	5	5/			GLA
1989 10 02.76	S	8.5	AC	5.0	B		7	& 5	4			SZA
1989 10 02.77	S	8.7	AC	11	L	7	54	4	3			OSV
1989 10 03.75	S	8.4:	AC	8	R	6	20		2/			KOC03
1989 10 03.75	S	8.8	AC	15	L	7	50	3	3			JON04
1989 10 03.76	S	8.5	AC	5.0	B		7	& 5	4			SZA
1989 10 04.77	S	8.6	AC	5.0	B		7	5	5			SZA
1989 10 04.80	S	8.0	AC	5.0	B		10	4.5				MIZ01
1989 10 05.75	S	8.7	AC	15	L	7	50	3.5	3			JON04
1989 10 05.80	S	7.8	AC	5.0	B		10	5				MIZ01
1989 10 13.73	S	8.5	AC	8	R	6	20	1.5	2			KOC03
1989 10 15.72	S	8.0:	AC	8	R	6	20	2	1			KOC03
1989 10 15.74	S	7.4	AC	15	L	7	50	6	4			JON04
1989 10 17.73	& S	7.4	AC	8	R	6	20	3	3			KOC03
1989 10 18.73	& S	6.7	AC	15	L	7	50	8	5			JON04
1989 10 19.73	& S	6.5	AC	15.2	L	5	125	4	5	0.2		KOC03
1989 10 22.71	& S	6.4	AC	15	L	7	50	10	6	0.1		JON04
1989 10 29.16	& S	5.7	AC	6.0	B		20	8	2/			SAR02
1989 11 05.15	& S	5.2	AC	6.0	B		20	&15	4/	0.5	345	SAR02
1989 11 05.15	& S	5.3	AC	11	L	7	169	7	4/	0.1		KOC03
1989 11 13.14	& S	4.8:	AC	5.0	B		7	7	6/	0.4	320	UJV
1989 11 18.15	& S	4.7:	AC	6.0	B		20	8	5			SAR02

Comet Aarseth-Brewington 1989 XXII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1989 12 20.20	& S	4.4	AC	2.5	B		7	3.5	7	2	315	WIE

Comet Levy 1990 XX

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1990 05 27.05	S	11.2	AC	20.3	T	10	80	1.5	3			SCH05
1990 05 28.05	S	11.2	AC	20.3	T	10	80	1.0	3			SCH05
1990 05 29.04	S	10.8	AC	20.3	T	10	80	1.0	3			SCH05
1990 05 30.05	S	10.8	AC	20.3	T	10	80	1.0	3			SCH05
1990 05 31.04	S	10.8	AC	20.3	T	10	80	1.0	3			SCH05
1990 06 01.05	S	10.8	AC	20.3	T	10	80	1.0	3			SCH05
1990 06 02.01	S	9.8	AA	33.3	L	4	55	1.8	3/			BRI03
1990 06 03.08	S	9.7	AA	33.3	L	4	55	2.1	4			BRI03
1990 06 04.05	S	8.8	AA	8.0	B		20	1.7				KEI
1990 06 04.05	S	9.5	AA	29.8	L	5	63	1.4	3/			KEI
1990 06 05.05	S	10.8	AC	20.3	T	10	80	1.0	3			SCH05
1990 06 20.02	S	8.3	AA	5.0	B		10					KEI
1990 06 20.02	S	8.4	AA	8.0	B		20					KEI
1990 06 20.02	S	8.8	AA	8.0	B		20					BIR
1990 06 20.02	S	9.0	AA	21.4	L		60	2	3			BIR
1990 06 23.02	S	8.8	AA	8.0	B		20					BIR
1990 06 24.00	S	8.8	AA	8.0	B		20	3	3			BIR
1990 06 25.03	S	9.1	AC	20.3	T	10	80	1.8	5			SCH05
1990 06 25.04	S	9.0	AC	8.0	B		20	2	5			SCH05
1990 06 26.03	S	9.0	AC	8.0	B		20	2	5			SCH05
1990 06 27.00	S	9.0	AC	8.0	B		20	2	4			SCH05
1990 06 27.98	S	8.1	AA	5.0	B		10	4.3	5	0.2	292	KEI
1990 06 28.00	S	8.5	AA	8.0	B		20	3	3			BIR
1990 06 28.99	S	8.4	AA	8.0	B		20	4	3			BIR
1990 06 29.00	S	8.0	AA	5.0	B		10	5.1	5			KEI
1990 06 30.06	S	9.0	AC	8.0	B		20	4	4			SCH05
1990 07 03.01	S	8.0	AA	5.0	B		10	3.4	5			KEI
1990 07 03.01	S	8.4	AA	8.0	B		20	2.3	6			KEI
1990 07 04.00	S	8.3	AA	8.0	B		20	4	3			BIR
1990 07 04.06	S	8.3	AA	33.3	L	5	57	3	5/			BRI03
1990 07 08.15	S	6.9	AA	5.0	B		10					KID
1990 07 11.98	S	7.8	AA	8.0	B		20	6	5			BIR
1990 07 14.95	S	7.2	AA	3.2	B		6	6.8				KEI
1990 07 14.95	S	7.4	AA	5.0	B		10	6.8	6			KEI
1990 07 14.95	S	7.4	AA	8.0	B		20	6.8				KEI
1990 07 15.01	S	7.5	AA	8.0	B		20	6	5			BIR
1990 07 16.96	S	7.3	AA	8.0	B		20	5	5			BIR
1990 07 16.97	S	7.6	AA	8.0	B		15	6	3			HUR
1990 07 17.97	S	7.3	AA	5.0	B		10	6.8	5			KEI
1990 07 18.98	S	7.5	AA	8.0	B		15					KOR
1990 07 18.99	S	7.3	AA	6.0	B		9	6	5			BIR
1990 07 19.96	S	7.5	AA	8.0	B		15	12	5			HUR
1990 07 19.98	S	7.0	AA	5.0	B		10	6.8	6			KEI
1990 07 20.94	S	6.8	AA	5.0	B		10	6.0	6			KEI
1990 07 21.02	S	6.6	AA	3.2	B		6	6.8				KEI
1990 07 21.02	S	6.7	AA	5.0	B		10	6.8	6			KEI
1990 07 21.04	S	6.8	AA	6.0	B		9	8	5	0.45	247	BIR
1990 07 22.93	S	6.8	AA	5.0	B		12	13	4	1.27	267	BRI03
1990 07 22.97	S	6.5	AA	3.2	B		6	11.2				KEI
1990 07 22.97	S	6.5	AA	5.0	B		10	9.8	6/	1.17	258	KEI
1990 07 22.97	S	6.6	AA	8.0	B		20	5.6	6/		270	KEI
1990 07 22.99	S	6.7	SC	5.0	B		10	12	3			FRA01
1990 07 23.98	S	6.5	AA	6.0	B		9	10	5			BIR
1990 07 24.01	S	6.9	SC	5.0	B		10	12	3			FRA01
1990 07 24.99	S	6.2	AA	5.0	B		10	9.5	6	0.50	242	KEI
1990 07 25.02	S	6.6	SP	3.0	B		3					BIR
1990 07 25.97	S	6.2	AA	3.2	B		6	10.8				KEI
1990 07 25.97	S	6.3	AA	5.0	B		10	10.8	7			KEI
1990 07 27.00	S	6.6	SC	5.0	B		10	9	4			FRA01

Comet Levy 1990 XX [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1990 07 27.94	M	6.4:		5.0	B		7	18	4	0.4	220	GAM01
1990 07 28.10	S	6.6	AA	5.0	B		12	16	4/	1.0	250	BRI03
1990 07 29.03				8.0	B		20	8	5	0.8	232	BIR
1990 07 29.03	S	6.4	AA	3.0	B		3					BIR
1990 07 30.01	B	6.5	SC	5.0	B		10	12	5			FRA01
1990 07 30.95	S	5.8	AA	3.2	B		6	8	7			KEI
1990 07 30.95	S	5.8	AA	5.0	B		10	10.5	7		225	KEI
1990 07 31.99				8.0	B		20	8	5	0.7	243	BIR
1990 07 31.99	S	5.8	AA	3.2	B		6	8.0	7			KEI
1990 07 31.99	S	5.8	AA	5.0	B		10	8.0	8	0.57	249	KEI
1990 07 31.99	S	6.1	AA	3.0	B		3					BIR
1990 08 01.09	S	6.1	AA	5.0	B		12	16	4/	0.7	250	BRI03
1990 08 01.97	S	5.8	AA	5.0	B		10	6.7	8	0.50	245	KEI
1990 08 05.91	S	5.5	AA	5.0	B		10	7.5	7/	0.57	239	KEI
1990 08 06.93	S	5.5:	AA	5.0	B		10	5.0	7/			KEI
1990 08 08.18	S	5.3	AA	5.0	B		10		3			KID
1990 08 09.07	S	5.1	AA	5.0	B		10		5			KID
1990 08 09.92	S	5.5	AA	5.0	B		10	7.4	7			KEI
1990 08 12.88	B	4.7	SC	4.0	B		8	19	4			FIS
1990 08 12.89	S	4.9	AA	3.2	B		6	6.2	8			KEI
1990 08 12.89	S	5.1	AA	5.0	B		10	7.8	8	0.40	213	KEI
1990 08 12.94	I	4.4	AA	0.0	E		1					HUR
1990 08 12.94	S	4.7	AA	8.0	B		15	&20	6	&1.0	196	HUR
1990 08 13.90	S	4.7	AA	8.0	B		15	&25	6	0.5	200	HUR
1990 08 13.93	S	4.9	AA	5.0	B		10	9.3	8	0.67	198	KEI
1990 08 14.91	S	4.7	AA	8.0	B		15	&14	6	0.87	190	HUR
1990 08 14.92	I	4.0	AA	0.0	E		1	&14	5			HUR
1990 08 14.98	M	4.2	AA	5.0	B		12	23	6	0.2	191	BRI03
1990 08 15.98	M	4.0	AA	5.0	B		12	27	6	2.0	175	BRI03
1990 08 16.84	B	4.5	SC	5.6	B		8	24	3/			FIS
1990 08 16.89	M	4.3	AA	5.0	B		12	27	7	1.37	160	BRI03
1990 08 16.90	S	3.8	AA	0.0	E		1	25				KEI
1990 08 16.90	S	3.9	AA	2.5	B		3	22	8		180	KEI
1990 08 16.90	S	4.1	AA	5.0	B		10	13.8	8	0.47	168	KEI
1990 08 16.93	I	4.0	AA	0.0	E		1	&40				HUR
1990 08 16.93	S	4.9	AA	8.0	B		15	&16	6			HUR
1990 08 17.05	M	4.6	AA	5.0	B		7					MOO02
1990 08 18.86	M	3.9	AA	5.0	B		12	30	7	1.5	160	BRI03
1990 08 19.91	M	4.0	AA	5.0	B		12	27	7	1.0	160	BRI03
1990 08 20.04	S	3.8	AA	0.0	E		1	26				KEI
1990 08 20.04	S	4.0	AA	2.5	B		3	17				KEI
1990 08 20.04	S	4.0	AA	3.2	B		6	16.9	8	0.83	152	KEI
1990 08 20.10	M	4.6	AA	5.0	B		7	20				MOO02
1990 08 21.15	S	4.2	AA	5.0	B		10					KID
1990 08 21.21	M	3.9	AA	5.0	B		12	32	7/	1.03	140	BRI03
1990 08 21.95	I	4.0	AA	0.0	E		1					HUR
1990 08 21.95	I	4.1	AA	0.0	E		1					HUR
1990 08 21.95	S	4.6	AA	8.0	B		15	&12	6	0.33	95	HUR
1990 08 22.15	S	3.9	AA	5.0	B		10			3		KID
1990 08 23.84	B	3.5	SC	3.0	B		8	27	4			FIS
1990 08 23.93	I	4.1	AA	0.0	E		1					HUR
1990 08 23.94	S	4.1	AA	8.0	B		15	&12	6	0.5	85	HUR
1990 08 23.97	S	3.3	AA	0.0	E		1	27				KEI
1990 08 23.97	S	3.5	AA	3.2	B		6	21	7/		90	KEI
1990 08 23.97	S	3.6	AA	5.0	B		10	18	8		109	KEI
1990 08 24.84	M	3.8	AA	5.0	B		12	13	8	1.11	110	BRI03
1990 08 24.94	B	3.6	SC	3.0	B		8	23	3			FIS
1990 08 25.79	M	3.6	AA	5.0	B		12	21	8	1.20	80	BRI03
1990 08 25.93	S	3.3	AA	0.0	E		1	33				KEI

Comet Levy 1990 XX [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1990 08 25.93	S	3.6	AA	3.2	B		6	17.4	8		90	KEI
1990 08 26.93	S	3.4	AA	0.0	E		1	22		1.67	76	KEI
1990 08 27.93	S	3.5	AA	0.0	E		1	29				KEI
1990 08 28.03	M	4.3	AA	5.0	B		7					MOO02
1990 08 28.80	M	3.6	AA	5.0	B		12	7	8	2.0	60	BRI03
1990 08 28.90	S	3.9	AA	8.0	B		15	12	5			HUR
1990 08 29.95	S	3.3	AA	0.0	E		1	25				KEI
1990 08 29.95	S	3.5	AA	2.5	B		3	28.5		1.17	81	KEI
1990 08 29.95	S	3.9	AA	3.2	B		6	12.7	7/	1.50	73	KEI
1990 08 30.04	M	4.7	AA	5.0	B		7					MOO02
1990 08 30.91	S	3.8	AA	8.0	B		15	9	5	0.25	85	HUR
1990 09 07.89		4.9		5.0	B		10	>10	4	&0.5		VEN01
1990 09 16.90	S	4.8	AA	5.0	B		10		5			KID
1990 09 18.88	S	5.0	AA	5.0	B		10		6	2.0		KID
1990 09 18.89	S	5.2	AA	8.0	B		11		6	4.0		KID
1991 01 09.83	B	8.1	S	10.0	B		20		5			OHK
1991 02 09.62	B	7.9	S	7.0	B		10		4	&0.5		OHK
1991 02 22.07	S	8.0	AA	8.0	B		20	4	2			BIR
1991 03 05.86	S	8.0	SC	9	R	11	50	5	1			FRA01
1991 03 19.84	M	9.8	AA	33.3	L	5	55	2.5	3			BRI03
1991 03 22.87	M	10.1	AA	33.3	L	5	55	1.6	1/			BRI03

Comet Arai 1990 XXVI

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1991 01 09.67	B	9.8	S	16	L	6	45		2			OHK

Comet Shoemaker 1992y

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 01.41	C	19.8	FA	91.4	L	5		0.15		<0.01	337	SCO01

Comet Mueller 1994c

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 03 15.76	C	16.4	GA	60.0	Y	6		0.35				NAK01
1994 03 18.71	C	16.6	HS	20.0	L	6		0.4				ITO02
1994 03 31.55	a C	16.1	GA	60.0	Y	6		0.5				NAK01
1994 04 08.57	C	16.5	GA	60.0	Y	6		0.35				NAK01
1994 04 13.70	C	17.0	GA	60.0	Y	6		0.3				NAK01
1994 04 30.60	C	18.0	GA	60.0	Y	6		0.25				NAK01
1994 05 06.53	C	18.3	GA	60.0	Y	6		0.25				NAK01
1994 05 12.52	C	18.1	GA	60.0	Y	6		0.3				NAK01
1994 06 01.50	C	19.1	GA	60.0	Y	6		0.25				NAK01

Comet Mueller 1993a

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 09 23.97	S	11.1	VB	20	R	14	155	1.2	3			SHA02
1993 10 09.85	S	9.8	GA	20.3	T	10	51	1.8	3			HAS02
1993 10 09.91	S	10.0	AA	20	R	14	40	2.6	3			SHA02
1993 10 15.94	S	9.8	AA	20	R	14	40	1.5	3			SHA02
1993 10 17.85	S	9.5	AA	20	R	14	40	3	3	0.05	10	LAN03
1993 10 18.79	S	9.3	AC	20	R	14	40	2.6	3			SHA02
1993 10 18.99	S	9.3	AA	20	R	14	40	2	4			LAN03
1993 10 21.02	S	9.2	AA	20	R	14	40	3	4			LAN03
1993 11 11.91	S	9.7	AC	20	R	14	40	2.5	3			SHA02
1993 11 15.06	S	9.8	AA	20	R	14	40	2	3			LAN03
1993 11 17.79	S	9.1	VB	20	R	14	40	2.5	2			SHA02

Comet Mueller 1993a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 11 18.76	S	9.9	GA	20.3	T	10	92	0.9	4			HAS02
1993 11 18.89	M	9.2	AC	25.4	J	6	47	4.0	5			BOU
1993 11 19.12	S	8.8	AA	20	R	14	40	4	2			LAN03
1993 11 19.74	S	9.7	GA	20.3	T	10	92	1.2	4			HAS02
1993 12 04.84	M	9.2	AC	25.4	J	6	47	4.0	4/			BOU
1993 12 04.91	S	10.5:	AA	20	R	14	40	3	3			LAN03
1993 12 06.75	S	9.5	AA	20	R	14	40	3	4			LAN03
1993 12 07.80	M	9.5	AC	25.4	J	6	47	3.0	4			BOU
1993 12 07.83	S	9.7	AA	20	R	14	40	3	3			LAN03
1993 12 10.78	S	9.2	AA	20	R	14	40	3	2	0.10	30	LAN03
1993 12 14.74	M	9.6	AC	25.4	J	6	47	2.8	5			BOU
1993 12 31.80	S	9.7	AC	25.4	J	6	58	2.2	2/			BOU
1994 01 01.78 a	S	9.8	AC	25.4	J	6	58	2.0	3			BOU
1994 01 09.76	S	9.8	AC	25.4	J	6	72	2.2	4/			BOU
1994 01 16.77	S	9.8	AC	25.4	J	6	58	2.0	3			BOU
1994 02 02.09 !	S	10.2	AC	20	L	6	55					HAL
1994 05 11.78	S	11.1	SM	20.3	L	7	56	1	1			CAM03
1994 05 17.43	S	11.3	AC	41	L	4	83					HAL
1994 05 19.79	C	12.1	EC	60.0	Y	6		2.8				NAK01
1994 05 21.35	S[	11.9:	GA	35.9	L	7	85	! 1.0				MOD
1994 06 09.43	S	11.7	AC	41	L	4	83					HAL
1994 06 10.72	C	12.8	HS	20.0	L	6		0.5				ITO02
1994 06 12.35 &	S	12.5	GA	35.9	L	7	85	0.8	1			MOD

Comet Mueller 1993p

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 11 12.78	S	12.2	AC	25.4	J	6	88	1.3	1/			BOU
1993 11 16.82	S	12.1	AC	25.4	J	6	88	1.3	1/			BOU
1993 11 17.82	S	11.9	AC	25.4	J	6	88	1.5	1			BOU
1993 11 18.89	S	12.0	AC	25.4	J	6	88	1.5	1			BOU
1993 12 04.82	S	12.0	AC	25.4	J	6	88	1.5	1			BOU
1993 12 07.78	S	11.8	AC	25.4	J	6	58	2.0	1			BOU
1993 12 14.77 a	S	11.6	AC	25.4	J	6	115	1.8	1			BOU
1994 01 01.77	S	11.0:	GA	25.4	J	6	88	2.0	2			BOU
1994 01 09.73	S	10.7	GA	25.4	J	6	58	2.0	3			BOU
1994 01 16.73	S	10.5:	AC	25.4	J	6	58		2			BOU
1994 02 02.08 !	S	10.8	AA	20	L	6	55					HAL
1994 04 01.40	S	8.7	AA	8.0	B		15					SEA01
1994 04 02.38	S	8.5	AA	5.0	B		10					SEA01
1994 04 02.38	S	8.6	AA	8.0	B		15					SEA01
1994 04 05.37	S	8.3	AA	5.0	B		10					SEA01
1994 04 05.37	S	8.4	AA	8.0	B		15	3	3			SEA01
1994 04 06.38	S	8.2	AA	5.0	B		10	2				SEA01
1994 04 06.38	S	8.3	AA	4.0	B		8					SEA01
1994 04 06.38	S	8.3	AA	8.0	B		15	2	5			SEA01
1994 04 08.93	S	8.7	AA	8.0	B		11	8	6			DES01
1994 04 10.92	S	8.6	AA	8.0	B		11	8	5			DES01
1994 04 10.93	S	8.8	AA	7.0	B		16					DES01
1994 04 11.93	B	7.7	S	7.0	B		10	11.4	3			DEA
1994 04 14.38	S	7.8	AA	5.0	B		10	7	2			SEA01
1994 04 14.38	S	7.9	AA	8.0	B		15	6	2			SEA01
1994 04 28.92	B	9.0	AA	7.0	B		10	7.2	3			DEA
1994 04 29.94	S	9.3	AA	7.0	B		10	5.4	2			DEA
1994 05 03.40	S	10.0	LM	20.3	L	7	56	1	2	0.05	180	CAM03
1994 05 05.42	S	10.0	GA	20.3	L	7	35	1	1	0.05	180	CAM03
1994 05 05.42	S	10.0	GA	20.3	L	7	56	1	1	0.05	180	CAM03
1994 05 07.40	S	10.6	GA	25.4	L	4	71	2	0			SEA
1994 05 11.38	S	11.0	GA	20.3	L	7	35	1	0	0.05	180	CAM03

Comet Mueller 1993p [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 11.38	S	11.0	GA	20.3	L	7	56	1	0	0.05	180	CAM03
1994 05 12.38	S	11.2	GA	20.3	L	7	35	1	0	0.05	180	CAM03
1994 06 02.16	C	10.5:	FA	91.4	L	5		& 1.8	0	?	331	SCO01
1994 06 05.16	I[	12.5:		41	L	4	183					HAL
1994 06 09.17	I[	12.5:		41	L	4	183					HAL

Comet McNaught-Russell 1993v

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 03 06.13	!	S	8.7	NP	5.0	B		10					HAL
1994 03 10.13	!	S	8.3	NP	5.0	B		10					HAL
1994 03 15.96		S	9.8	AA	8.0	B		20		7/			LOU
1994 03 15.98		S	9.0	AA	8.0	B		11	5	7/			DES01
1994 03 16.82		S	7.3:	S	8.0	B		10	4.2	4			SHA02
1994 03 16.95		S	8.6	AA	8.0	B		20	10	5/		110	LOU
1994 03 16.97		S	8.8	AA	8.0	B		11	7	6			DES01
1994 03 17.95		S	8.8	AA	8.0	B		20		5			LOU
1994 03 18.92		S	8.5	AA	8.0	B		11	10	4	0.05	120	DES01
1994 03 18.97		S	8.6	AA	8.0	B		20	10	5		120	LOU
1994 03 19.00		S	7.1:	AA	20.0	T	10	50	2.2	3/	&1	256	SHA04
1994 03 19.81		S	7.2	HR	15.6	L	6	29	5	4			BOU
1994 03 19.84		S	7.0:	S	20	R	14	40	3.0	4			SHA02
1994 03 20.00		S	7.8	SC	20	L	8	45	5	8	&0.02	215	DID
1994 03 21.01		S	7.7	SC	20	L	8	45	5	8			DID
1994 03 21.80	a	S	7.1:	AC	20.0	T	10	78	& 4	2/			COM
1994 03 21.81		S	6.4	S	10.0	B	4	25	7	3			HAL04
1994 03 21.83		S	7.8	AA	20	R	14	40	3.4	4			SHA02
1994 03 21.84		S	6.5:	SC	30.0	L	5	39	& 7	5/			SCH04
1994 03 21.84		S	7.8	AA	8.0	B		20	3.6	5			SHA02
1994 03 21.96		S	8.4	AA	8.0	B		11	10	5			DES01
1994 03 22.12		M	7.4	SC	5.0	B		10					HAL
1994 03 22.72		S	8.0:	AA	11	L	7	40	& 4	4			BAR06
1994 03 22.95		S	8.5	AA	8.0	B		11	8	5			DES01
1994 03 23.96		S	8.4	AA	8.0	B		11	6	6			DES01
1994 03 24.00		S	7.6	SC	20	L	8	45	5	8	?0.02	210	DID
1994 03 24.77		S	8.0:	AA	11	L	7	40	3.5	3			BAR06
1994 03 25.83		S	7.1!	AA	8.0	B		20	4.2	3			SHA02
1994 03 26.79		M	7.9	S	10.0	B		25	3.5	4			KUB
1994 03 26.80		S	7.0:	S	10.0	B	4	25	2.8	1			HAL04
1994 03 26.83		S	7.1	AA	8.0	B		20	4.2	3			SHA02
1994 03 27.00		S	6.9	SC	20	L	8	45	7	6	?	225	DID
1994 03 27.01		S	6.4	AA	20.0	T	10	50	& 1.2	4			SHA04
1994 03 27.78		M	7.8	S	10.0	B		25	3.1	3			KUB
1994 03 27.79		S	7.1	AA	8.0	B		20	4	5			BAR
1994 03 27.80		S	7.4	AA	10.0	B		25	3.5	5			MEY
1994 03 27.88		S	7.7	AA	10.0	B		25	5.9	4			HAS02
1994 03 27.93		S	8.3	AA	8.0	B		11	12	5			DES01
1994 03 28.93		S	8.5	AA	5.0	B		20					PRI03
1994 03 28.95		S	8.4	AA	8.0	B		11	10	5			DES01
1994 03 29.83		S	6.7	AA	20.0	T	10	63	& 4	5/			COM
1994 03 29.83		S	6.8	AA	8.0	B		15					COM
1994 03 29.83		S	7.5	AA	20	R	14	40	4.1	4			SHA02
1994 03 29.84		S	7.0	AA	8.0	B		10	6.3	5			SHA02
1994 03 29.91		S	6.5	AA	12.5	R		20	10	1	0.17		BEA
1994 03 29.94		S	8.3	AA	5.0	B		20					PRI03
1994 03 29.96		S	8.4	AA	8.0	B		11	12	6			DES01
1994 03 30.48		M	8.0	S	16.0	W	4	19	6	3			TSU02
1994 03 30.78		S	6.7:	S	10.0	B	4	25	6.8	1			HAL04
1994 03 30.79		M	7.2	S	10.0	B		25	6.7	4			KUB

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 03 30.80	S	7.3	AA	10.0	B		25	5.5	5	?		MEY
1994 03 30.81	S	6.8	S	8.0	B		10		3			KUC01
1994 03 30.82	B	7.4	S	5	R	11	34	11	0			SKA01
1994 03 30.82	S	6.9	AA	12.0	B		20	3.5	6			LOO01
1994 03 30.82	S	7.2	AA	10.0	B		25	4.3	4			HAS02
1994 03 30.84	S	6.5	AA	15.6	L	6	29	6	4			BOU
1994 03 30.84	S	6.7	AC	8.0	B		15	& 8	7			SCH04
1994 03 30.94	S	8.3	AA	8.0	B		20	15	7			LOU
1994 03 31.01	S	6.7	SC	20	L	8	45	8	7			DID
1994 03 31.12	S	7.3	SC	5.0	B		10					HAL
1994 03 31.46	B	7.6	HS	5.0	B		7	5	4			SOW
1994 03 31.78	S	7.4	AA	11	L	7	40	4.4	4			BAR06
1994 03 31.81	S	6.8	S	8.0	B		10		6			KUC01
1994 03 31.83	s S	6.8	SC	7.5	R	7	21	6	3/			FIE
1994 03 31.95	S	8.4	AA	8.0	B		20	15	7			LOU
1994 04 01.02	S	6.6	SC	20	L	8	45	8	6	?	200	DID
1994 04 01.05	S	6.1	AA	20.0	T	10	50	3.1	6/	&1	270	SHA04
1994 04 01.08	M	7.0	SC	5.0	B		10	7	3			MOD
1994 04 01.09	M	7.3	SC	20.0	L	5	35	3.7	3/			MOD
1994 04 01.77	S	7.4	AA	11	L	7	40	4.8	4			BAR06
1994 04 01.87	S	6.5	AA	8.0	B		10	9.5	4	1.1	85	SHA02
1994 04 01.87	S	6.5	AA	20.0	T	10	78	& 4	6			COM
1994 04 01.97	S	8.3	AA	8.0	B		11	14	5			DES01
1994 04 02.04	S	6.7	NO	5.0	B		10	9	4/			BOR
1994 04 02.05	S	6.6	SC	20	L	8	45	10	8	?	213	DID
1994 04 02.13	S	7.0	S	5.0	B		10	2.3	3			SCH12
1994 04 02.79	S	6.6	AA	8.0	B		20	8	6			BAR
1994 04 02.80	M	6.5	S	10.0	B		25	10	4			KUJ
1994 04 02.80	S	6.8	S	10.0	B	4	25	10	6			HAL04
1994 04 02.81	S	6.9	S	8.0	B		10	4.8	4			KUC01
1994 04 02.83	S	5.9	AA	5.0	B		10	13	2			ZAN01
1994 04 02.84	S	6.4	AA	8.0	B		15	7	4			BOU
1994 04 02.87	S	6.7	AA	5.0	B		7	9.5	4	1.5	75	SHA02
1994 04 02.88	S	6.4	AA	8.0	B		15	& 4	5/			COM
1994 04 02.90	B	7.4	S	10	R	4	25	8	7			VET01
1994 04 02.90	S	6.7	SC	8.0	B		15	9	6			SCH04
1994 04 02.92	S	8.3	AA	8.0	B		11	15	3/	0.05	95	DES01
1994 04 02.93	S	8.2	AA	20.0	C	10	58	12	4	0.05	90	DES01
1994 04 02.94	S	8.4	AA	8.0	B		20	10	7			LOU
1994 04 03.00	S	6.2	AA	20.0	T	10	50	3.0	6	&1	251	SHA04
1994 04 03.44	B	7.3	AA	8.0	B		11	12	4			WAT01
1994 04 03.44	M	6.9	S	3.5	B		7	9	3			TSU02
1994 04 03.79	S	6.6	S	10.0	B	4	25	10	6			HAL04
1994 04 03.81	S	6.9	AA	10.0	B		25	4.5	4			HAS02
1994 04 03.81	S	7.2	S	8.0	B		10	6.7	5			KUC01
1994 04 03.82	B	7.2:	S	4.0	B		12		4			PIO
1994 04 03.86	B	6.5	S	10.0	B	4	25	9.5	7			VET01
1994 04 03.92	S	8.3	AA	8.0	B		11	12	5	0.06	90	DES01
1994 04 03.92	S	8.4	AA	5.0	B		20					PRI03
1994 04 03.94	S	8.2	AA	8.0	B		20	10	7			LOU
1994 04 04.00	S	6.3	AA	20.0	T	10	50	3.0	6	&1	255	SHA04
1994 04 04.12	M	7.5	SC	5.0	B		10	6	3			MOD
1994 04 04.13	M	7.9	SC	20.0	L	5	35	3.6	3/			MOD
1994 04 04.46	M	5.8	S	3.5	B		7	9	3			TSU02
1994 04 04.82	S	7.3	AA	5.0	B		7	10				LOO01
1994 04 04.84	S	6.9	AA	8.0	B		20	12	4			SHA02
1994 04 04.88	S	7.7	AA	11	L	7	40	4.5	4			BAR06
1994 04 04.97	S	8.3	AA	8.0	B		11	12	6			DES01
1994 04 05.04	S	6.4	AA	20.0	T	10	50	2.8	6/	1	285	SHA04

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 05.05	S	6.4	HR	5.0	B		10	10	5			BOR
1994 04 05.05	S	6.4	SC	20	L	8	45	20	7			DID
1994 04 05.07	M	7.4	SC	5.0	B		10	7.8	3			MOD
1994 04 05.09	M	7.9	SC	20.0	L	5	35	3.7	3/			MOD
1994 04 05.10	B	7.5	AA	15	L	5	25	7	2			NOW
1994 04 05.50	M	7.5	AC	20	L	6	38	5	6			KAM03
1994 04 05.79	S	7.5	S	10.0	B	4	25	7	6			HAL04
1994 04 05.80	S	6.2	S	5.0	B		7	8	4			KYS
1994 04 05.81	B	7.4	S	5	R	11	34	11	8			SKA01
1994 04 05.81	B	7.5	S	5.0	B		10					GRZ
1994 04 05.81	M	6.9	S	10.0	B		25	12	5			KUJ
1994 04 05.81	M	7.4	S	10.0	B		25	6.5	4	0.33	89	KUB
1994 04 05.81	S	6.5	AA	8.0	B		20	9	5			BAR
1994 04 05.82	B	7.4:	S	4.0	B		12		3			PIO
1994 04 05.83	S	6.8	AC	4.0	B		12	7	3/			FEI
1994 04 05.83	S	7.1	S	8.0	B		10	6.5	5			KUC01
1994 04 05.84	S	6.0	AA	5.0	B		10	13	3			ZAN01
1994 04 05.84	S	7.1	AA	5.0	B		10	9	6			LOO01
1994 04 05.85	S	6.4	AA	8.0	B		15	& 4	6			COM
1994 04 05.85	S	6.5	AA	8.0	B		15	7	4/			BOU
1994 04 05.85	S	6.5	AA	20.0	T	10	78	& 4	6			COM
1994 04 05.85	S	6.6	SC	8.0	B		15	10	5/			SCH04
1994 04 05.85	S	6.7	AA	8.0	B		10	8.9	4			SHA02
1994 04 05.86	S	6.6	AA	4.0	R	5	10	8	3			BOU
1994 04 05.96	S	8.3	AA	8.0	B		11	10	6			DES01
1994 04 06.04	S	6.5	AA	20.0	T	10	50	2.4	6/	&1	255	SHA04
1994 04 06.13	M	6.9	SC	5.0	B		10			0.4	100	HAL
1994 04 06.81	B	7.3	S	5	R	11	34		0			SKA01
1994 04 06.81	S	6.3	S	5.0	B		7	8	3			KYS
1994 04 06.81	S	6.4	AA	8.0	B		20	9	5			BAR
1994 04 06.81	S	7.8	S	10	R	4	25	7.6	7			VET01
1994 04 06.81	S	7.9	S	10.0	B	4	25	7	6	0.08		HAL04
1994 04 06.83	S	6.7:	S	8.0	B		10	5.6	5			KUC01
1994 04 06.83	S	6.9	AC	4.0	B		15	5	4			FEI
1994 04 06.84	S	6.9	AA	5.0	B		10	9	4			LOO01
1994 04 06.85	S	6.6	AA	8.0	B		15	7	4			BOU
1994 04 06.87	S	6.6	AA	8.0	B		15	& 4	5			COM
1994 04 06.90	S	6.4	AA	5.0	B		10	9	3			ZAN01
1994 04 06.92	S	7.3:	SC	8.0	B		15	& 8	6			SCH04
1994 04 07.79	B	8.3	S	10.0	B	4	25	7.2	6			VET01
1994 04 07.83	S	6.8	S	8.0	B		10	6.4	5			KUC01
1994 04 07.83	S	7.5	S	10.0	B	4	25	7	6			HAL04
1994 04 07.87	B	7.4	S	10.0	B		25	6	4			KYS
1994 04 07.96	S	8.2	AA	8.0	B		11	15	7			DES01
1994 04 08.06	B	6.9	HR	5.0	B		10					BOR
1994 04 08.06	S	6.5	HR	5.0	B		10	11	5			BOR
1994 04 08.11	M	7.4	SC	5.0	B		10	6.1	2/			MOD
1994 04 08.12	M	8.1	NO	20.0	L	5	35	2.6	3			MOD
1994 04 08.79	S	7.7	S	10	R		25	5	3			KYS
1994 04 08.80	M	6.7	S	10.0	B	4	25	14	4			LEH
1994 04 08.80	S	6.8	AC	16	L	6	90	4.5	6	0.15		HAD01
1994 04 08.87	S	7.3	AA	10.0	B		25	5.0	4			HAS02
1994 04 08.88	S	6.5	AA	12.5	R		20		1	0.25	135	BEA
1994 04 08.91	S	6.5	AA	8.0	B		20	9.5	4			SHA02
1994 04 08.92	S	8.3	AA	8.0	B		11	15	7			DES01
1994 04 09.05	S	6.4	SC	20	L	8	45	10	8	0.5	95	DID
1994 04 09.06	S	6.7	HR	5.0	B		10	10	5			BOR
1994 04 09.45	M	7.4	AA	20	L	6	50	5	6			KAM03
1994 04 09.80	S	6.7	SC	8.0	B		20	7	5			BAR

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 09.83	S	7.2	AC	5.0	B		10	10	6			LOO01
1994 04 09.92	S	8.4	AA	8.0	B		11	15	7			DES01
1994 04 09.98		6.3	AA	12.5	R		20		1	0.33	135	BEA
1994 04 10.85	S	7.0	AA	12.5	R		20		1	0.33	135	BEA
1994 04 11.44	B	7.4	S	7.0	B		10	7.3	3			WAT01
1994 04 11.46	B	7.9	HS	17.5	L	5	36	5	4			SOW
1994 04 11.50	M	7.5	S	20	L	6	38	5	5			KAM03
1994 04 11.80	S	6.7	S	5.0	B		7	5	4			KYS
1994 04 11.85	S	6.7	AA	5.0	B		7	7.9	4			SHA02
1994 04 11.85	S	6.8	AA	8.0	B		20	8.2	3			SHA02
1994 04 11.86	S	6.8	AA	20.0	T	10	77	& 4	5			COM
1994 04 11.87	S	6.8	AA	8.0	B		15	6.5	3			BOU
1994 04 11.88	S	6.4	AA	5.0	B		10	15	0			ZAN01
1994 04 11.92	M	7.4	S	10.0	B		25	7	4			KUJ
1994 04 12.81	S	6.7	S	5.0	B		7	5	3			KYS
1994 04 12.86	S	6.5	AA	5.0	B		10	9	0			ZAN01
1994 04 12.88	S	6.8	AA	12.5	R		20		2	0.30	135	BEA
1994 04 12.88	S	6.9	AA	20.0	T	10	77	& 3	5			COM
1994 04 12.90	S	6.9	AA	8.0	B		15	7	3			BOU
1994 04 13.44	B	7.4	AA	7.0	B		10	8	4			WAT01
1994 04 13.47	M	7.4	S	20	L	6	38	8	6			KAM03
1994 04 13.81	B	8.3	S	5.0	B		10					GRZ
1994 04 13.86	S	6.8	AA	5.0	B		7	7.9	5			SHA02
1994 04 13.86	S	6.8	AA	8.0	B		20	8.2	5			SHA02
1994 04 13.88	S	7.0	AA	12.5	R		20		3	0.17	45	BEA
1994 04 13.89	S	6.7	AA	20.0	T	10	77	> 4	4/			COM
1994 04 13.90	S	6.3	AA	8.0	B		10	6	4			LAN03
1994 04 13.91	S	6.8	AA	8.0	B		15	7.5	4			BOU
1994 04 14.46	M	7.0	S	3.5	B		7	8	3			TSU02
1994 04 14.48	B	7.5	S	7.0	B		10	11.5	3			WAT01
1994 04 14.49	M	7.3	S	20	L	6	38	6	5			KAM03
1994 04 14.82	S	8.6	S	10	R	4	25	5.6	5			VET01
1994 04 14.83	S	7.4	S	11	L	8	32	5	5			KYS
1994 04 14.85	S	7.3	S	5.0	B		7	5	6			KYS
1994 04 14.86	S	7.3	AA	25.2	L	4	53	5	4			LOO01
1994 04 14.87	S	8.4	S	10.0	B	4	25	3.5	1			HAL04
1994 04 15.02	S	6.8	SC	20	L	8	45	14	8			DID
1994 04 15.05	S	6.6	HR	5.0	B		10	13	4			BOR
1994 04 15.08	S	7.2	AA	20.0	T	10	50	2.2	3			SHA04
1994 04 15.47	B	7.9	S	7.0	B		10	7				WAT01
1994 04 15.50	M	7.5	S	20	L	6	38	6.5	5			KAM03
1994 04 15.82	S	8.4	S	10	R	4	25	3.7	4			VET01
1994 04 15.84	S	7.9	S	11	L	8	32	4	4			KYS
1994 04 15.86	S	6.9	AA	8.0	B		15	&10	3			SCH04
1994 04 15.90	S	7.0	AA	12.5	R		20		2	0.17	160	BEA
1994 04 16.02	S	6.8	SC	20	L	8	46	7	6			DID
1994 04 16.06	B	8.0	AA	15	L	5	25	6	5			NOW
1994 04 16.08	S	7.3	AA	20.0	T	10	50	2.2	3/			SHA04
1994 04 16.14	S	6.7	HR	5.0	B		10	10	5			BOR
1994 04 16.22	S	7.3	SC	5.0	B		10					HAL
1994 04 16.45	S	7.5	S	15.0	R	5	25	7	3/			NAG02
1994 04 16.48	B	8.0	S	7.0	B		10	5.5	3			WAT01
1994 04 16.48	M	7.5	S	20	L	6	38	6.5	4			KAM03
1994 04 17.02	S	6.8	SC	20	L	8	46	15	8			DID
1994 04 17.06	S	6.7	HR	5.0	B		10	10	5			BOR
1994 04 17.88	S	6.9	AA	5.0	B		10	14	0			ZAN01
1994 04 17.90	S	7.0	AA	5.0	B		8		2	0.17	160	BEA
1994 04 18.03	S	7.2	AA	8.0	B		15	7	3			BOU
1994 04 18.05	S	7.1	AA	20.0	T	10	78	& 6	5			COM

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 18.11	M	8.1	SC	20.0	L	5	35	3.4	3			MOD
1994 04 18.81	B	8.1	S	5.0	B		10					GRZ
1994 04 18.86	S	7.0	AA	11.0	L	7	32	8	3/			SCH04
1994 04 18.98	M	7.0	TI	10.0	B		25	6.5				FAB
1994 04 19.81	S	8.9	B	11	L	8	32	3	4			KYS
1994 04 19.82	M	7.7	S	10.0	B		25	7	4/			KUB
1994 04 19.82	S	8.0	S	5.0	B		7		5			KYS
1994 04 19.82	S	8.7	S	10	R	4	25	1	2			VET01
1994 04 19.83	S	8.7	S	10.0	B	4	25	5.5	0			HAL04
1994 04 19.84	M	8.4	S	10.0	B	4	25	7	3			LEH
1994 04 19.85	M	8.1	S	10.0	B		25	5	2			KUJ
1994 04 20.07	S	7.3	AA	20.0	T	10	78	& 6	5			COM
1994 04 20.10	S	7.3	AA	8.0	B		15	7	4			BOU
1994 04 20.81	M	6.8	S	10.0	B		25	12	2			ZNO
1994 04 20.83	M	7.1	S	8.0	B		10	15	3/			HOR02
1994 04 20.86	M	7.6	S	10.0	B	4	25	7	3			LEH
1994 04 20.86	M	7.7	S	10.0	B		25	6	3			KUJ
1994 04 21.04	S	6.9	SC	20	L	8	46	7	7			DID
1994 04 21.06	S	6.7	HR	5.0	B		10	10	5			BOR
1994 04 21.86	M	7.8	S	10.0	B		25	6	2			KUJ
1994 04 21.86	M	7.9	S	10.0	B	4	25	6	3			LEH
1994 04 21.91	S	6.7	AA	8.0	B		20	8.2	3			SHA02
1994 04 21.91	S	7.2	AA	11.0	L	7	32	& 8	5			SCH04
1994 04 21.92	S	6.9	AA	20	R	14	40	4	3	0.12	80	LAN03
1994 04 22.05	S	7.1	SC	20	L	8	46	6	4			DID
1994 04 22.06	S	6.8	HR	5.0	B		10	12	4/			BOR
1994 04 22.81	S	8.0	S	11	L	8	32	3	4			KYS
1994 04 22.90	M	8.0	S	10.0	B	4	25	5	3			LEH
1994 04 23.90	S	7.1	AA	8.0	B		20	6.3	3			SHA02
1994 04 24.84	M	8.0	S	10.0	B		25	6	4			KUB
1994 04 24.88	S	7.2	AA	20	R	14	40	4	2	0.17	70	LAN03
1994 04 25.09	S	7.4	AA	10	B		14	3.1	3			SHA02
1994 04 26.83	M	8.3:	TI	10.0	B		25	6				FAB
1994 04 27.04	S	7.3	SC	20	L	8	46	7	4			DID
1994 04 27.82	M	7.9	S	10.0	B		25	11	1	0.25		ZNO
1994 04 27.83	M	8.0	S	10.0	B		25	7.5	4			KUB
1994 04 27.85	S	7.5	AA	5.0	B		20	5	5			DIE02
1994 04 28.47	S	7.8	S	15.0	R	5	25	6	3			NAG02
1994 04 28.49	S	7.6	S	6.5	R	8	16	6	3/			NAK01
1994 04 28.83	M	7.9	S	8.0	B		10	9	2/			HOR02
1994 04 28.86	M	8.7	S	10.0	B	4	25	6	2			LEH
1994 04 28.88	M	8.8	TI	10.0	B		25	4.6				FAB
1994 04 28.88	S	7.8	AC	20.0	T	10	78	& 5	4/			COM
1994 04 28.89	S	8.5	AA	10	B		14	3.1	3			SHA02
1994 04 28.93	S	8.1	AA	8.0	B		15	5.5	2			BOU
1994 04 29.15	S	8.3	NP	5.0	B		10					HAL
1994 04 29.51	S	7.9	S	15.0	R	5	25	7	3			NAG02
1994 04 29.82	M	8.0	S	10.0	B		25	8	1			ZNO
1994 04 29.83	S	8.4	S	5.6	R	14	40	10	4			DEM
1994 04 29.85	M	8.7:	TI	10.0	B		25	4.2				FAB
1994 04 29.86	S	8.2	S	20.3	T	10	51	3	3			KAM01
1994 04 29.87	S	8.1	AA	13.0	L	6	36	4.5	3			MEY
1994 04 29.90	S	7.7:	SC	30.0	L	5	60	& 8	5/			SCH04
1994 04 30.47	M	8.5	S	16.0	W	4	19	6	5			TSU02
1994 04 30.81	S	9.0	AC	16.2	L	6	42	5	1			SZA02
1994 04 30.86	M	8.4	S	8.0	B		10	10	2			HOR02
1994 04 30.89	S	7.8	NP	11.0	L	7	32	10	5			SCH04
1994 04 30.89	S	8.2	AA	8.0	B		20	4.7	2			SHA02
1994 04 31.90	S	8.5	AA	11	L	7	32	4	2/			BAR06

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 01.04	S	8.3	AA	20	R	14	40	3.5	2			LAN03
1994 05 01.26	S	7.7	AA	20	T	10	51	& 8	3/			SPR
1994 05 01.86	S	8.6	AC	25.2	L	4	53	4	3			LOO01
1994 05 01.88	S	8.5	AA	11	L	7	40	4	3			BAR06
1994 05 01.89	S	9.2	AA	10.0	B		25	5.4	3			HAS02
1994 05 01.92	S	9.0	AA	10	B		14	4.2	3			SHA02
1994 05 01.92	S	9.1	AA	8.0	B		20	3.1	2			SHA02
1994 05 02.07	S	7.4	HR	5.0	B		10	11	3/			BOR
1994 05 02.14	M	8.6	AA	30.5	R	15	176	4	2			AUG
1994 05 02.14	M	8.7	AA	30.5	R	15	176	4	2			VOG
1994 05 02.25	M	10.0	AC	35.9	L	7	85	2.0	2/			MOD
1994 05 02.29	M	9.8	AC	20.0	L	5	35	2.6	1/			MOD
1994 05 02.83	S	8.6	S	5.6	R	14	40	9	5			DEM
1994 05 02.84	M	7.9	S	8.0	B		10	12	1/			HOR02
1994 05 02.85	S	7.8	AA	30.5	L	5	117	6	5	0.15	90	VIC
1994 05 02.86	M	8.6	S	10	B		25	5	3			KUB
1994 05 02.86	M	8.7	S	10.0	B		25	9	2	0.2		ZNO
1994 05 02.86	S	7.4	AA	33.4	L	4	61	6	5			SZE02
1994 05 02.86	S	8.0	AA	13.0	L	6	36	4.5	4			MEY
1994 05 02.87	S	8.1	AA	15.2	L	5	42	5.5	3			MOE
1994 05 02.88	S	8.0	NP	11.0	L	7	32	9	5/			SCH04
1994 05 02.88	S	8.7	AA	20.3	T	10	51	4.0	3			KAM01
1994 05 02.92	S	8.2	AC	25.2	L	4	53	5	3			LOO01
1994 05 02.93	S	8.3	AC	25.4	J	6	47	5	5			BOU
1994 05 02.94	S	8.5	AA	11	L	7	40	4	3			BAR06
1994 05 03.02	M	8.9	TI	10.0	B		25	4				FAB
1994 05 03.05	S	7.7	SC	20	L	8	46	5	3			DID
1994 05 03.07	S	7.5	HR	5.0	B		10	12	3			BOR
1994 05 03.25	M	10.1	AC	35.9	L	7	85	2.4	2			MOD
1994 05 03.27	S	8.0	AA	20	T	10	64	& 6	2/			SPR
1994 05 03.29	M	9.5	AC	20.0	L	5	35	2.7	1			MOD
1994 05 03.84	S	8.4	AA	11	L	7	40	4	3			BAR06
1994 05 03.92	S	8.2	AA	15.2	L	5	42	5.0	3			MOE
1994 05 03.93	S	8.1	AA	13.0	L	6	36	6	4			MEY
1994 05 04.00	S	9.8	AA	20	R	14	40	4.0	3			LAN03
1994 05 04.84	S	9.0	S	5.6	R	14	40	6	4			DEM
1994 05 04.87	S	9.0	AA	11	L	7	40	4	3			BAR06
1994 05 04.88	S	7.8	AA	6	R		20					SZE02
1994 05 04.88	S	8.3	AA	15	R	15	85	4	2			DIE02
1994 05 05.92	S	9.9	AA	15	R	15	85	1	2.			DIE02
1994 05 05.93	M	9.0	AA	11	L	7	40	3	3			BAR06
1994 05 06.08	S	8.0	HR	5.0	B		10	11	3			BOR
1994 05 06.13	S	8.4	SC	33.3	L	4	56	5.4	2			KRO02
1994 05 06.26	S	8.5	AA	20	T	10	64	& 5	2/			SPR
1994 05 06.49	S	9.8:	HS	40.0	L	6	80	5.0	3			KOB01
1994 05 06.50	P	11.5	HS	17.5	L	5		2	2			SOW
1994 05 06.72	S	8.7	S	15.0	R	5	25	6	2/			NAG02
1994 05 06.97	M	8.9	S	10.0	B		25	5	2			KYS
1994 05 06.98	S	8.1	AA	13.0	L	6	36	3	3/			MEY
1994 05 07.27	S	8.6	AA	20	T	10	64	5.5	3/			SPR
1994 05 07.85	M	7.6	S	8.0	B		10	10	1/			HOR02
1994 05 07.86	M	8.1	S	8.0	B		10		1			DVO
1994 05 07.86	M	9.0	S	10	B		25	6.5	3			KUB
1994 05 07.86	S	8.7	AA	11	L	7	32	4.5	3/			BAR06
1994 05 07.87	B	8.7	S	11.0	L	7	32	10	3			KRY01
1994 05 07.87	M	8.2	S	10.0	B		25	9	2			ZNO
1994 05 07.90	M	8.8	TI	10.0	B		25	6.5				FAB
1994 05 07.90	S	8.1	AA	13.0	L	6	36	6	3/			MEY
1994 05 07.90	S	9.2	AC	25.2	L	4	53	3	4/			LOO01

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 07.91	S	8.2	AA	15	R	15	85	3	2			DIE02
1994 05 07.92	S	8.7	AA	30.5	L	5	117	4	8			VIC
1994 05 07.92	S	9.0	S	10.0	B		25	4.5	1			KYS
1994 05 07.93	S	8.8	AA	20.0	L	4	42	10	6			SCH04
1994 05 07.93	S	9.2	AC	6.0	B		20	5	0/			SAR02
1994 05 07.94	S	8.3	AC	25.4	J	6	61	2.6	4			FEI
1994 05 07.97	M	8.5	AC	25.4	J	6	47	4.5	4			BOU
1994 05 07.98	S	8.4	AC	8.0	B		15	6	2			BOU
1994 05 08.02				44.5	L	4	146	3.5	3	0.1	100	SAR02
1994 05 08.02	S	9.6	AC	44.5	L	4	75					SAR02
1994 05 08.14	S	8.4	SC	33.3	L	4	56	5.2	2			KRO02
1994 05 08.28	S	8.4	AA	10	R	5	17	4.5	3			SPR
1994 05 08.48	M	8.5	S	16.0	W	4	49	4	4			TSU02
1994 05 08.49	S	8.5	S	15.0	R	5	25	6	3			NAG02
1994 05 08.50	S	9.5	HS	25.0	L	6	56	4	3			KON03
1994 05 08.84	S	8.5	AA	11	L	7	40	4.5	2			BAR06
1994 05 08.87	M	9.3	S	10	B		25	4.5	2			KUB
1994 05 08.88	S	8.9	AA	15.2	L	5	42	4.5	1			MOE
1994 05 08.95	S	8.1	AA	13.0	L	6	36	5.5	3/			MEY
1994 05 08.95	S	9.1	AC	6.0	B		20	5	2			SAR02
1994 05 08.99	S	8.6	AA	20	R	14	40	2.3	3			SHA02
1994 05 09.00				44.5	L	4	146	2.3	4	0.1	110	SAR02
1994 05 09.00	S	9.4	AC	44.5	L	4	75					SAR02
1994 05 09.36	S	9.3	NP	5.0	B		10					HAL
1994 05 09.88	S	8.9	AC	15.2	L	5	42	5.0	1			MOE
1994 05 09.90	S	10.3	AA	20	R	14	40	3	2			LAN03
1994 05 09.94	S	8.3	AC	25.4	J	6	61	3.5	5			FEI
1994 05 09.98	S	9.1	AA	20	R	14	40	4.0	3			SHA02
1994 05 10.24	S	8.8	SC	33.3	L	4	56	& 3	2			KRO02
1994 05 10.84	S	8.7	AA	11	L	7	40	4	3			BAR06
1994 05 10.87	S	9.2	AC	15.2	L	5	42	4.0	1			MOE
1994 05 10.96	S	8.4	AA	13.0	L	6	36	4	3/			MEY
1994 05 11.08	S	8.5	AC	8.0	B		20	7	3			BOR
1994 05 11.08	S	8.6	AC	31.7	L	6	68	6	4			BOR
1994 05 11.27	S	8.9	AA	20	T	6	40	4.0	2/			SPR
1994 05 11.32	M	10.6	AC	20.0	L	5	35	2.4	1/			MOD
1994 05 11.85	S	8.6	AA	11	L	7	40	4	3			BAR06
1994 05 11.87	M	9.4	S	10	B		25	5.5	0			KUB
1994 05 11.88	S	8.4	AA	13.0	L	6	36	6	3			MEY
1994 05 11.91	S	9.0	S	20.3	T	10	50	3.0	2/			KAM01
1994 05 11.91	S	9.2	NP	20.0	L	4	42	7	3			SCH04
1994 05 11.92	S	10.1	AC	25.2	L	4	53	1	2			LOO01
1994 05 12 95	S	8.4	AA	13.0	L	6	36	5	3			MEY
1994 05 12.87	S	9.6	S	11	L	8	32	3.5	2			KYS
1994 05 12.99	S	9.2	NP	20.0	L	4	42	8	5			SCH04
1994 05 13.17	S	8.4	AC	8.0	B		20	8.5	2			BOR
1994 05 13.17	S	8.8	AC	31.7	L	6	68	5	3/			BOR
1994 05 13.29	M	9.8	GA	20.0	L	5	35	2.8	1/			MOD
1994 05 13.33	S	9.6	GA	5.0	B		10	5	0			MOD
1994 05 13.87	S	9.7:	S	10.0	B		25	3.0	2			HAS02
1994 05 13.89	S	8.5	AA	13.0	L	6	36	5	3			MEY
1994 05 13.91	M	9.3	TI	13	L	8	69	4.5	1			HOR02
1994 05 13.97	S	10.3	AA	20	R	14	40	2.9	2			SHA02
1994 05 14.01	S	9.2	NP	20.0	L	4	42	8	6			SCH04
1994 05 14.10	S	8.0	AC	5.0	B		10	13	0/			BOR
1994 05 14.10	S	8.8	AC	31.7	L	6	68	4.4	3			BOR
1994 05 14.27	M	10.3	GA	20.0	L	5	35	2.6	1			MOD

Comet McNaught-Russell 1993v [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 14.27	S	10.3	GA	20.0	L	5	35					MOD
1994 05 14.89	S	9.5	AA	11	L	7	32	& 3	1			BAR06
1994 05 14.94	S	9.0	AC	25.4	J	6	61	2.5	5			FEI
1994 05 15.04	S	8.2	S	8.0	B		11	4.0	1			GAR02
1994 05 15.88	S	9.5	AC	33.4	L	4	61	2.5	1			SZE02
1994 05 15.89	M	8.7	TI	8.0	B		10	12	1			HOR02
1994 05 15.93	S	9.5	NP	20.0	L	4	42	8	5			SCH04
1994 05 15.94	S	10.5	AC	25.2	L	4	53	2.2	2			LOO01
1994 05 16.84	M	8.6	S	10.0	B		25	8	2			ZNO
1994 05 17.00	S	9.0	AA	11	L	7	40	4	2			BAR06
1994 05 17.29	S	9.6	NP	5.0	B		10					HAL
1994 05 17.92	S	10.1	AC	15.2	L	5	42	3.0	1			MOE
1994 05 20.32	S	11.2	GA	20.0	L	5	35	1.5	0			MOD
1994 05 26.99	S	10.5:	AC	15.2	L	5	42	2.5	1			MOE
1994 05 27.90	S	10.5	AC	15.2	L	5	42	2.5	1			MOE
1994 05 28.11	S	10.7	AC	31.7	L	6	68	2.5	2			BOR
1994 05 28.97	S	11.1	HS	33.3	L	5	85	2.5	2			SHA02
1994 05 29.16	S	11.4	HS	33.3	L	4	56	2.4	1			KRO02
1994 05 29.93	S	10.6	AC	15.2	L	5	42	3.0	1			MOE
1994 05 29.98	S	11.2	HS	33.3	L	5	85	1.6	2			SHA02
1994 05 30.89	M	9.8	TI	10.0	B		25	7	2			ZNO
1994 05 30.89	S	10.4	TI	11	L	8	54	2.5	3			KYS
1994 05 30.91	S	10.7:	AC	15.2	L	5	42	2.5	1			MOE
1994 05 30.92	M	10.7:	TI	13	L	8	69	2.5	1			HOR02
1994 05 30.93	S	11.4:	AC	20.0	T	10	78	> 4	0			COM
1994 05 31.94	S	10.7	HS	20.3	T	10	50	2.2	0			KAM01
1994 06 01.87	M	10.4	TI	10.0	B		25	5.5	1/			ZNO
1994 06 01.90	S	11 :	AC	33.4	L	4	214	1.5	1			SZE02
1994 06 01.96	S	9.7	TI	5.6	R	14	40	5	4			DEM
1994 06 02.14	S	10.6	AC	31.7	L	6	68	4	2			BOR
1994 06 02.98	S	11.6	AC	20.0	T	10	78	> 4	0/			COM
1994 06 03.13	S	10.5	AC	31.7	L	6	68	4	1			BOR
1994 06 03.29	S	12.8:	GA	35.9	L	7	85	1.0	0/			MOD
1994 06 03.62	C	12.3	GA	10.0	A	4		5.0				NAK01
1994 06 03.88	S	12.5:		30.5	L	5	117	2	1			VIC
1994 06 03.92	S	10.1	TI	11	L	8	32	3	0			KYS
1994 06 03.95	S	10.7:	AC	15.2	L	5	42	2.5	1			MOE
1994 06 04.15	S	10.7	AC	31.7	L	6	68	3.5	0			BOR
1994 06 04.21	S	11.8	GA	20.0	L	5	35	3.3	0			MOD
1994 06 04.99	S	11.5	HS	33.3	L	5	85	1.9	2			SHA02
1994 06 05.24	S	11.0	AC	41	L	4	83					HAL
1994 06 05.94	S	10.9:	AC	15.2	L	5	42	2.0	1			MOE
1994 06 07.08	S	12.5:	AC	20.3	T	10	80	0.8	0			GAR02
1994 06 07.87	M	10.0	TI	10	B		25	5	2			ZNO
1994 06 07.98	S	10.4	AC	10.0	B		25	1.0	3			HAS02
1994 06 08.90	S	11.2	TI	11	L	8	32	2	1			KYS
1994 06 08.99	S	11.6	AC	20.0	T	10	78	> 3	0			COM
1994 06 09.02	S	12.1	AC	44.5	L	4	146	5	1/			BAK01
1994 06 09.02	S	12.3	AC	44.5	L	4	146	3.5	0/			SAR02
1994 06 09.15	[	11.0	AC	31.7	L	6	68					BOR
1994 06 09.34	S	11.1	NP	41	L	4	83		1			HAL
1994 06 10.27	S	13.6	GA	35.9	L	7	85	1.0	0			MOD
1994 06 10.61	C	14.7	HS	20.0	L	6		1.0				ITO02
1994 06 13.99	S	11.5:	AC	20.0	T	10	78	> 3	0			COM
1994 06 14.99	S	11.5:	AC	20.0	T	10	78	> 3	0			COM
1994 06 15.55	C	14.2	GA	60.0	Y	6		1.3			147	NAK01
1994 06 24.88	M	11.8	HS	10	B		25	2	2/			ZNO
1994 06 29.87	! V	15.2	YF	20.0	T	2		& 1	3			MIK

Comet Shoemaker-Levy 1994d

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 06.22	I	[13.5:		41	L	4	183					HAL
1994 04 06.89	S	13.5	AC	25.4	J	6	115	0.7	0/			BOU
1994 04 08.48	C	15.8	GA	60.0	Y	6		0.35		0.04	115	NAK01
1994 04 09.51	C	14.8	HS	20.0	L	6		0.58				ITO02
1994 04 13.47	C	15.9	GA	60.0	Y	6		0.4		0.06	111	NAK01
1994 05 01.83	C	16.1	HS	50	Y	4		0.18		0.02	90	CAV
1994 05 04.82	S	[13.5	AC	33.4	L	4	214					SZE02
1994 05 06.46	C	16.1	GA	60.0	Y	6		0.35			100	NAK01
1994 05 12.46	C	16.3	GA	60.0	Y	6		0.3			80	NAK01

Comet Takamizawa-Levy 1994f

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 16.46	M	10.8	NP	20	L	6	55					HAL
1994 04 18.38	S	10.9	GA	20.0	L	5	35	1.4	1			MOD
1994 04 20.09	S	9.6	TI	11	L	8	32	1.5	1			KYS
1994 04 20.10	S	10.3:	AC	20.0	T	10	78		2			COM
1994 04 20.39	M	10.9	GA	35.9	L	7	85	1.4	3			MOD
1994 04 21.35	S	9.6	AC	31.7	L	6	68	3.5	4			BOR
1994 04 22.12	S	10.5:	AC	11.0	L	7	32	& 3	5			SCH04
1994 04 23.34	S	9.9	GA	20	L	8	46	3	5			DID
1994 04 23.36	S	9.5	AC	31.7	L	6	68	2.4	5			BOR
1994 05 01.04	S	9.2	AA	33.3	L	5	120	1.2	2			SHA02
1994 05 01.04	S	10.2	AC	25.2	L	4	53	1	3			LOO01
1994 05 01.12	S	10.0	AA	20	R	14	40	1.5	1			LAN03
1994 05 02.96	M	9.5	TI	13	L	8	69	2.3	2/			HOR02
1994 05 02.99	S	9.1:	S	5.0	B		10					OLE
1994 05 03.00	S	8.7	AA	13.0	L	6	36	3	4			MEY
1994 05 03.01	M	9.4	TI	10.0	B		25	2.5				FAB
1994 05 03.01	S	9.5	AC	33.4	L	4	61	2.1	4			SZE02
1994 05 03.06	S	9.2	AC	10.0	B		25	2.4	2			HAS02
1994 05 03.33	S	9.5	AA	8.0	B		11		8			DES01
1994 05 03.34	M	10.4	GA	35.9	L	7	85	1.3	3			MOD
1994 05 04.02	S	9.2:	GA	11	L	7	40	3	3			BAR06
1994 05 04.07	! V	10.0	YF	20.0	T	2		& 8	7			MIK
1994 05 04.32	S	9.5	AA	8.0	B		11		7			DES01
1994 05 05.00	S	9.2:	S	7.0	B		30					OLE
1994 05 05.03	S	9.0	AA	11	L	7	40	3	3			BAR06
1994 05 05.06	S	9.1	AA	10	L	10	74	5	0			KIS02
1994 05 05.29	S	9.9	AA	8.0	B		20		1			LOU
1994 05 05.33	S	9.3	AA	8.0	B		11	3	7			DES01
1994 05 06.01	M	8.7	AA	11	L	7	40	3.6	3			BAR06
1994 05 06.34	S	9.5	GA	20	L	8	46	3	3			DID
1994 05 06.65	C	10.7	HS	20.0	L	6		0.9				ITO02
1994 05 06.75	C	10.4	GA	60.0	Y	6		3.5			210	NAK01
1994 05 06.75	M	8.5	S	16.0	W	4	19					TSU02
1994 05 06.99	S	9.4	S	10.0	B		25	1.8	4			KYS
1994 05 07.01	S	9.0	AA	13.0	L	6	36	2.5	3/			MEY
1994 05 07.02	S	9.3:	AA	11	L	7	40	3	1			BAR06
1994 05 07.30	S	9.2	GA	20	L	8	46	& 3	6			DID
1994 05 07.34	S	9.2	AA	8.0	B		11	5	6	0.04	160	DES01
1994 05 07.37	M	10.0	GA	20.0	L	5	35	1.3	3			MOD
1994 05 07.93	M	9.0	TI	10.0	B		25	2.8	2			FAB
1994 05 07.97	M	8.4	TI	13	L	8	69	5	3/			HOR02
1994 05 07.97	a S	9.1	AC	20.0	L	4	42	5	5			SCH04
1994 05 07.98	M	8.5	TI	13	L	8	69		2/			DVO
1994 05 07.99	S	8.6	AA	13.0	L	6	36	5	4			MEY
1994 05 07.99	S	8.7	AA	15	R	15	85	3	4			DIE02
1994 05 08.04	S	9.0	S	6.0	B		20	2	5			SAR02

Comet Takamizawa-Levy 1994f [cont.]

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 08.06		B	9.7	S	10.0	B		25	2	3			KYS
1994 05 08.30		S	9.1	SC	33.3	L	4	56	2.4	6			KRO02
1994 05 08.30		S	9.6	AA	8.0	B		20		1			LOU
1994 05 08.33		S	8.9	AA	10	R	5	17	3.5	4/			SPR
1994 05 08.33		S	9.2	AA	8.0	B		11	5	6			DES01
1994 05 08.78		M	9.0	S	16.0	W	4	49					TSU02
1994 05 08.90		S	9.6	AC	15.2	L	5	42	3.0	2			MOE
1994 05 08.96		M	9.3	S	10	B		25	3.5	1			KUB
1994 05 08.98		S	8.5	AA	13.0	L	6	36	6.5	4			MEY
1994 05 09.00		S	8.9	AA	11	L	7	40	3.3	3			BAR06
1994 05 09.03		M	8.8	AA	11	L	7	40		2			BAR06
1994 05 09.04		S	8.7	S	6.0	B		20	6	3			SAR02
1994 05 09.04		S	9.5	S	10.0	B		25	2	2			KYS
1994 05 09.04		S	9.6	AA	20	R	14	40	1.1	4			SHA02
1994 05 09.43		M	9.6	AC	20	L	6	55					HAL
1994 05 09.72		S	9.4	HS	40.0	L	5	56	5	3			KON03
1994 05 09.91		S	9.8	AC	15.2	L	5	42	3.0	1			MOE
1994 05 10.21		S	9.2	SC	33.3	L	4	56	1.9	5			KRO02
1994 05 10.33		S	9.1	AA	8.0	B		11	5	5/			DES01
1994 05 10.89		S	9.8	AC	15.2	L	5	42	3.5	1			MOE
1994 05 10.97		S	9.1	AA	11	L	7	40	2.6	4			BAR06
1994 05 10.98		S	8.5:	AA	13.0	L	6	36	5.5	4			MEY
1994 05 11.05		S	8.6	AC	25.4	J	6	61	2.0	5/			FEI
1994 05 11.33		S	9.0	AA	8.0	B		11	6	5			DES01
1994 05 11.79		S	9.6	SM	8.0	B		20	2	0			CAM03
1994 05 11.79		S	9.6	SM	20.3	L	7	56	1	2			CAM03
1994 05 11.94		S	9.5	AC	20.0	L	4	42	3	5			SCH04
1994 05 11.98		S	8.5	S	20.3	T	10	50	2.6	3			KAM01
1994 05 11.99		S	8.2	AC	13.0	L	6	36	3	4			MEY
1994 05 12.04		S	8.7	AA	15	R	15	85	3	8			DIE02
1994 05 12.04		S	8.7	AC	25.2	L	4	53	2	4			LOO01
1994 05 12.05		S	9.7	S	11	L	8	54	2	3			KYS
1994 05 12.08		S	9.4	AA	20	R	14	40	3	3			LAN03
1994 05 12.33		M	9.7	AA	30.5	R	15	143	2.5	7			AUG
1994 05 12.62		C	10.8	HS	20.0	L	6		0.9				ITO02
1994 05 12.98		S	7.8	AC	13.0	L	6	36	4	5			MEY
1994 05 13.05		S	8.8	AC	20.0	L	4	42	9	5/			SCH04
1994 05 13.05		S	8.9	AC	11.4	L	8	36	3.0	7			BRO04
1994 05 13.19	a	S	8.5	AC	8.0	B		20	4.5	3			BOR
1994 05 13.26		M	9.7	AA	30.5	R	15	176	2.5	7			AUG
1994 05 13.31		M	9.6	GA	20.0	L	5	35	2.4	3/			MOD
1994 05 13.88		S	8.9	S	10.0	B		25	2.1	3			HAS02
1994 05 13.90		M	8.5	TI	13	L	8	69	4.5	3			HOR02
1994 05 13.91		S	7.8	AC	13.0	L	6	36	5.5	4			MEY
1994 05 14.02		S	8.5	AA	35	L	5	97	9	7			VAN04
1994 05 14.02		S	10.1	VB	30	R	18	90	1.9	2			SHA02
1994 05 14.03		S	8.8	AC	20.0	L	4	42	7	5			SCH04
1994 05 14.08		S	8.8	S	11	L	8	32	3	1			KYS
1994 05 14.17		S	8.3	AC	8.0	B		20	5	3			BOR
1994 05 14.17		S	8.6	AC	31.7	L	6	68	3.4	5			BOR
1994 05 14.25		B	8.5	AA	15	L	5	25	8	1			NOW
1994 05 14.36		M	9.6	GA	20.0	L	5	35	3.0	3/			MOD
1994 05 14.68		B	9.7	AC	13.0	H	3	24	6	5			OHM
1994 05 15.01		S	8.9	S	6.0	B		20	6	3			SAR02
1994 05 15.04		S	8.7	AC	25.2	L	4	53	2.5	3			LOO01
1994 05 15.04		S	9.1	AC	44.5	L	4	146	2	6/	0.05	240	SAR02
1994 05 15.91		M	8.9	TI	8.0	B		10	6	3			HOR02
1994 05 15.94		S	8.5	AA	15	R	15	85	7	2			DIE02
1994 05 15.96		B	8.9	S	11	L	8	54	3	4/			KYS

Comet Takamizawa-Levy 1994f [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 15.97	S	8.4	AA	35	L	5	97	7	7			VAN04
1994 05 15.97	S	8.9	AC	20.0	L	4	42	8	4/			SCH04
1994 05 16.03	S	9.0	AC	33.4	L	4	61	4	6			SZE02
1994 05 16.06	S	9.0	AC	20	L	5	35	2	5			POR03
1994 05 16.38	M	9.3	AA	7.6	R	12	38	3	7			AUG
1994 05 16.74	S	8.6	S	15.0	R	5	25	5	4			NAG02
1994 05 17.26	M	9.3	AA	7.6	R	12	38	3.5	6			AUG
1994 05 17.29	S	9.0	AA	8.0	B		11	6	5			DES01
1994 05 17.40	M	9.7	AC	41	L	4	83					HAL
1994 05 17.74	S	8.5	S	15.0	R	5	25	4	5			NAG02
1994 05 17.91	S	9.2	AC	15.2	L	5	42	4.0	1			MOE
1994 05 18.00	S	7.9	AA	15	R	15	85	7	3			DIE02
1994 05 18.29	S	8.9	AA	8.0	B		11	7	5			DES01
1994 05 18.30	M	9.2	AA	7.6	R	12	38	3.5	7			AUG
1994 05 19.29	S	8.9	AA	8.0	B		11	8	4/			DES01
1994 05 19.30	M	9.0	AA	7.6	R	12	38	4	7			AUG
1994 05 19.66	M	8.8	S	16.0	W	4	49					TSU02
1994 05 19.73	S	8.6	S	15.0	R	5	25	4	4/			NAG02
1994 05 20.24	S	8.6	AA	20	T	10	64	4.0	3/			SPR
1994 05 20.35	M	9.4	GA	20.0	L	5	35	1.9	3			MOD
1994 05 20.77	S	8.5	S	15.0	R	5	25	4	4			NAG02
1994 05 22.25	S	8.3	AA	20	T	10	64	4.0	2/			SPR
1994 05 23.25	S	8.5	AA	10	R	5	49	3.0	2			SPR
1994 05 26.89	M	8.7	TI	13	L	8	69	4.4	4/			HOR02
1994 05 26.91	S	8.0:	AC	15.2	L	5	42	3.5	2			MOE
1994 05 27.26	S	8.3	AA	20	T	6	80	4.5	2/			SPR
1994 05 27.87	S	8.9	AA	15	L	15	56	3.5	4			SAR02
1994 05 27.92	S	8.1	AC	15.2	L	5	42	3.5	2			MOE
1994 05 27.92	S	8.9	AC	28.0	T	10	108	& 2	3/			COM
1994 05 28.18	S	9.3	SC	33.3	L	4	56	3.6	5			KRO02
1994 05 28.92	S	8.4	AC	15.2	L	5	42	3.5	2			MOE
1994 05 28.98	S	8.5	AA	33.3	L	5	55	5.1	4			SHA02
1994 05 29.18	M	9.2	GA	20.0	L	5	35	2.9	3			MOD
1994 05 29.18	S	9.3	SC	33.3	L	4	56	3.8	5			KRO02
1994 05 29.19	S	9.1	GA	5.0	B		10	5.3	1			MOD
1994 05 29.88	S	8.7	AC	6	R		20	2				SZE02
1994 05 29.92	S	8.4	AA	11	L	7	40	4	3			BAR06
1994 05 29.93	S	7.8	AC	15.2	L	5	42	4.0	4			MOE
1994 05 29.94	S	8.4	AA	15	R	15	85	6	5			DIE02
1994 05 29.95	S	8.3	NP	20.0	L	4	42	8	4/			SCH04
1994 05 29.99	S	8.4	AA	33.3	L	5	55	5.1	4			SHA02
1994 05 30.00	S	8.4	AA	8.0	B		10	6.3	3			SHA02
1994 05 30.05	S	8.5	AA	20	R	14	40	4.5	4			LAN03
1994 05 30.59	M	8.7	AA	10.1	R	5	38	7	4			SAN03
1994 05 30.88	M	9.0	S	11	L	8	32	6	6			KYS
1994 05 30.90	S	8.1	AA	11	L	7	32	4	4/			BAR06
1994 05 30.91	M	8.4	TI	10.0	B		25	4.5	4			ZNO
1994 05 30.91	S	7.9	AC	15.2	L	5	42	4.0	3			MOE
1994 05 30.92	S	8.7	AC	20.0	T	10	78	3	3/			COM
1994 05 30.93	M	8.9	TI	13	L	8	69	4	5			HOR02
1994 05 30.93	M	9.1	S	10	B		25	4	4			KUB
1994 05 30.95	S	8.5	AA	15	R	15	85	6	5			DIE02
1994 05 30.96	S	9.1	AA	11.4	L	8	72	8	2.			BRO04
1994 05 31.20	S	9.4	SC	33.3	L	4	56	3.5	5			KRO02
1994 05 31.89	S	8.5	AA	10.0	B		25	3.6	4			HAS02
1994 05 31.92	S	8.6	AC	20.0	T	10	78	1.5	4			COM
1994 05 31.95	S	8.5	AA	5.0	B		20	7	6			DIE02
1994 05 31.96	S	8.5	S	20.3	T	10	50	3.0	5			KAM01
1994 06 01.02	S	8.2	AA	33.3	L	5	55	5.8	4			SHA02

Comet Takamizawa-Levy 1994f [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 01.56	S	8.8	HS	25.0	L	6	56	4	4	0.03	170	KON03
1994 06 01.65	S	8.6	AC	20	L	6	46	5.5				NAK01
1994 06 01.77	S	8.5	S	15.0	R	5	25	5	3/			NAG02
1994 06 01.86	M	8.8	TI	10.0	B		25	4.5	5			ZNO
1994 06 01.87	S	9.0	AC	10	L	10	74	2.5	3	0.05	200	KIS02
1994 06 01.89	S	9.6:	TI	5.6	R	14	40	2.5	2			DEM
1994 06 01.90	S	8.7	AC	6.0	B		20	5	3			SAR02
1994 06 01.91	S	8.3	AC	15.2	L	5	42	4.0	3			MOE
1994 06 01.92	M	8.6	AC	33.4	L	4	61	8	7	0.07	125	SZE02
1994 06 01.94	S	8.4	AA	11	L	7	40	4	4			BAR06
1994 06 02.15				31.7	L	6	68	3.1	5/	0.1	170	BOR
1994 06 02.15	S	8.0	AC	5.0	B		10	8	5			BOR
1994 06 02.28	S	8.0	AA	20	T	10	64	5.0	4/			SPR
1994 06 02.52	C	10.1	HS	20.0	L	6		2.0				ITO02
1994 06 02.61	M	8.8	S	16.0	W	4	49					TSU02
1994 06 02.89	S	8.4:	AA	11	L	7	40	4	4			BAR06
1994 06 02.97	S	8.5	AA	33.3	L	5	55	4.4	4			SHA02
1994 06 02.98	S	8.6	AC	20.0	T	10	78	& 3	5	&0.2	170	COM
1994 06 03.14	S	7.8	AC	5.0	B		10	9	5			BOR
1994 06 03.57	S	8.7	S	15.0	R	5	25	5	4/			NAG02
1994 06 03.62	C	9.7	GA	10.0	A	4		7.8		0.24	143	NAK01
1994 06 03.86	S	8.2	AA	30.5	L	5	117	6	6	0.15	120	VIC
1994 06 03.89	S	8.7	S	11	L	8	32	4	5			KYS
1994 06 03.90	S	9.1	TI	5.6	R	14	40	3	3			DEM
1994 06 03.92	S	8.3	AC	15.2	L	5	42	4.0	4			MOE
1994 06 03.93	S	8.4	AA	11	L	7	32	3.5	4			BAR06
1994 06 03.94	S	8.6	AA	33.4	L	4	61	6	6	0.25	120	SZE02
1994 06 04.16				31.7	L	6	68	4.5	6	0.2	160	BOR
1994 06 04.16	S	7.9	AC	5.0	B		10	9	5			BOR
1994 06 04.23	S	9.1	SC	33.3	L	4	56	3.9	5			KRO02
1994 06 04.25	M	9.4	GA	20.0	L	5	35	3.7	3			MOD
1994 06 04.30	S	9.1	GA	5.0	B		10	5.2	2			MOD
1994 06 04.31				35.9	L	7	85	1.5	4	0.05	159	MOD
1994 06 04.98	S	8.1	AA	11	L	7	32	4	4			BAR06
1994 06 04.98	S	8.7	AA	33.3	L	5	55	4.0	4			SHA02
1994 06 05.28	S	8.3	NP	5.0	B		10					HAL
1994 06 05.30	S	9.0	GA	5.0	B		10	7.8	1			MOD
1994 06 05.33	M	9.4	GA	20.0	L	5	35	3.8	3/			MOD
1994 06 05.76	S	8.7	S	15.0	R	5	25	5	3/			NAG02
1994 06 05.94	S	8.4	AC	15.2	L	5	42	3.5	4			MOE
1994 06 05.96	S	8.5	NP	8.0	B	5	20	4	2			MIL02
1994 06 06.21	Y	8.3	SC	25	T	4				>0.17	140	ROQ
1994 06 07.01	S	8.7	S	8.0	B		11	4	3			GAR02
1994 06 07.87	M	8.6	TI	10	B		25	4	3/			ZNO
1994 06 07.98	S	8.2	S	20.3	T	10	50	3.5	4			KAM01
1994 06 07.98	S	8.4	AA	8.0	B		10	6	3			LAN03
1994 06 07.98	S	8.7	AA	10.0	B		25	4.2	4			HAS02
1994 06 08.05	M	9.2	AC	44.5	L	4	146	2.0	6/	0.05	150	SAR02
1994 06 08.05	M	9.3	AC	44.5	L	4	146	2	6	0.1	160	TOT02
1994 06 08.27	S	8.0	AA	20	T	10	64	4.0	5/			SPR
1994 06 08.83	B	8.2	S	25.0	L	4	33	7	3			KRY01
1994 06 08.89	B	9.5	S	11	L	8	32	4	4			KYS
1994 06 08.90	S	8.8	AC	6.0	B		20	10	3			SAR02
1994 06 08.96	S	8.8	AA	8.0	B		10	7	4			LAN03
1994 06 09.01	S	8.9	AC	20.0	T	10	78	2	4			COM
1994 06 09.02				44.5	L	4	146	25	7/	0.5	170	SAR02
1994 06 09.03	S	8.8	AA	33.3	L	5	55	4.9	4			SHA02
1994 06 09.05	S	8.8	AA	8.0	B		20	6.3	3			SHA02
1994 06 09.16				31.7	L	6	68	3.2	6	0.15	175	BOR

Comet Takamizawa-Levy 1994f [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 09.16	S	8.0	AC	5.0	B		10	7				BOR
1994 06 09.30	M	9.7	GA	20.0	L	5	35	2.6	3			MOD
1994 06 09.34	S	8.5	NP	5.0	B		10					HAL
1994 06 10.14				31.7	L	6	68	3.6	5/	0.1	110	BOR
1994 06 10.14	S	8.2	AC	5.0	B		10	8				BOR
1994 06 10.28				35.9	L	7	85	1.3	4	0.03	128	MOD
1994 06 10.30	M	9.9	GA	20.0	L	5	35	2.3	3			MOD
1994 06 10.63	M	9.0	AA	10.1	R	5	23	5	3			SAN03
1994 06 10.64	C	11.4	HS	20.0	L	6		1.2				ITO02
1994 06 10.75	S	9.0	S	15.0	R	5	25	4	3/			NAG02
1994 06 11.92	S	8.6	AC	15.2	L	5	42	3.5	3			MOE
1994 06 12.18	Y	8.8	SC	25	T	4		0.75		&0.08	113	ROQ
1994 06 12.88	B	9.6	S	11	L	8	32	3	4			KYS
1994 06 12.92	M	8.9	S	10	B		25	4	6			KUB
1994 06 12.92	M	9.8	TI	13	L	8	69	3.5	4/			HOR02
1994 06 13.92	S	8.9:	AC	15.2	L	5	42	3.5	2			MOE
1994 06 13.94	S	9.1	NP	20.0	L	4	42	6	6			SCH04
1994 06 13.97	S	9.3	AA	10	B		14	3.1	2			SHA02
1994 06 13.98	S	8.8	AA	15	L	8	67	4.7	2			SHA02
1994 06 13.98	S	9.2	AC	20.0	T	10	78	& 3	3/			COM
1994 06 13.99	S	9.2	AC	35	L	5	103	3.5	6			BRO04
1994 06 14.00	S	8.7	AA	15	R	15	85	& 3	7			DIE02
1994 06 14.04	S	8.8	AC	33.4	L	4	61	7	6			SZE02
1994 06 14.76	S	9.0	S	15.0	R	5	25	3.5	3			NAG02
1994 06 14.92	B	9.4	S	10	B		25	4	3			KYS
1994 06 14.94	S	8.8	AC	15.2	L	5	42	4.0	2			MOE
1994 06 14.96	S	9.1	NP	20.0	L	4	42	6	5			SCH04
1994 06 14.96	S	9.1	S	10	B		25	3.5	3			KYS
1994 06 14.97	S	8.7	AA	33.3	L	5	55	3.8	3			SHA02
1994 06 14.98	S	9.3	AC	20.0	T	10	78	& 3	3/			COM
1994 06 15.32	S	8.5	NP	5.0	B		10					HAL
1994 06 15.54	C	10.3	GA	10.0	A	4		5.2		0.25	100	NAK01
1994 06 15.54	C	10.8	GA	60.0	Y	6		2.3		0.08	107	NAK01
1994 06 16.03	S	8.9	AA	20	R	14	40	6	3			LAN03
1994 06 16.03	S	9.0	AA	20	R	14	40	5.9	3			SHA02
1994 06 16.94	S	9.1	AC	15.2	L	5	42	3.0	2			MOE
1994 06 21.87	M	9.7	TI	10	B		25	4.5	2			ZNO
1994 06 22.22	Y	10.1	SC	25	T	4		& 0.58		?	100	ROQ
1994 06 23.03	S	9.1	AA	20	R	14	40	4.4	3			SHA02
1994 06 23.90	M	9.6	TI	13	L	8	69	2	2/			HOR02
1994 06 24.87	M	10.2	TI	10	B		25	4	2			ZNO
1994 06 24.91	M	9.6	TI	13	L	8	69	3	2			HOR02
1994 06 28.27	S	8.7	AA	20	T	10	64	3.5	4/			SPR
1994 06 29.28	S	8.8	AA	10	R	5	27	2.5	2/			SPR
1994 06 29.90 !	V	10.7	AA	20.0	T	2		& 5	6			MIK
1994 06 30.28	S	8.9	AA	10	R	5	27	3.0	2/			SPR
1994 06 30.93	S	9.6	AA	15	R	15	85	& 3	1			DIE02
1994 06 30.95	S	10.4:	AC	15.2	L	5	76	2.5	2			MOE

Comet Takamizawa 1994i

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 08.34	S	10.4	AA	10	R	5	49	2.0	3/			SPR
1994 05 08.67	C	11.3	GA	60.0	Y	6		2.3				NAK01
1994 05 08.98	V	11.6	L	65	L	4		+ 1.3		>0.12	50	PRA01
1994 05 08.98	v	13.7	L	65	L	4		4.4		>0.12	50	PRA01
1994 05 09.02	S[	9.0	AA	20	R	14	155					SHA02
1994 05 09.58	S	9.9	AA	10.0	B		25					SEA
1994 05 09.69	S	11.0	HS	40.0	L	5	56	3	4			KON03

Comet Takamizawa 1994i [cont.]

DATE (UT)		MM	MAG.	RF	AP.		T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 09.90	!	V	11.2	YF	20.0	T		2		& 3.5	8			MIK
1994 05 09.92		S	10.4	AC	15.2	L		5	42	2.0	1			MOE
1994 05 10.00		S	10.2	HS	20	R		14	155	0.7	3			SHA02
1994 05 10.16		S	11.3	HS	33.3	L		4	56	1.1	6			KRO02
1994 05 10.24		M	10.5	NP	20	L		6	55		6			HAL
1994 05 10.90		S	10.3	AC	15.2	L		5	42	3.0	2			MOE
1994 05 11.18		S	11.2	HS	33.3	L		4	56	1.2	5			KRO02
1994 05 11.21		S	9.4	GA	20	L		8	46	3	5			DID
1994 05 11.22		M	10.1	AA	30.5	R		15	143	2	7			AUG
1994 05 11.44		S	10.0	LM	20.3	L		7	56	1	3			CAM03
1994 05 11.96		S	10.3	HS	20.3	T		10	77	1.8	4			KAM01
1994 05 12.01		S	9.8	AC	13.0	L		6	36	3	4/			MEY
1994 05 12.07		S	10.5:	TI	11	L		8	54	2	2			KYS
1994 05 12.27		M	10.1	AA	30.5	R		15	143	2	7			AUG
1994 05 12.58		C	11.8	HS	20.0	L		6		0.9				ITO02
1994 05 12.95		S	10.3	AA	10.0	B			25	2.0	3			HAS02
1994 05 12.96		S	9.8	AC	13.0	L		6	36	& 6	4			MEY
1994 05 13.14		S	9.3	AC	8.0	B			20	4	2	?		BOR
1994 05 13.14		S	9.6	AC	31.7	L		6	68	3.0	5/			BOR
1994 05 13.23		M	10.0	AA	30.5	R		15	176	2	7			AUG
1994 05 13.56		S	9.8	AA	10.0	B			25					SEA
1994 05 13.90		S	9.4	AA	30.5	L		5	117	2	5			VIC
1994 05 13.92		S	9.7	AC	13.0	L		6	36	3	4			MEY
1994 05 13.95		S	9.8	AA	15.0	L		4	25	1.7	3			HAS02
1994 05 14.00		S	11.0	HS	30	R		18	230	0.6	3			SHA02
1994 05 14.06		S	9.9:	TI	11	L		8	54	2	2			KYS
1994 05 14.07		S	10.2	AA	35	L		5	97	2.5	5			VAN04
1994 05 14.23		S	9.7	GA	20	L		8	46	3	7			DID
1994 05 14.24		M	10.9	GA	20.0	L		5	35	1.5	3/			MOD
1994 05 14.68		B	10.0	AC	13.0	H		3	24	3	4			OHM
1994 05 14.99		M	10.3	AC	44.5	L		4	146	1.5	6			KIS02
1994 05 14.99		M	10.4	AC	44.5	L		4	146	1	7			SAR02
1994 05 15.57		S	9.8	AA	10.0	B			25					SEA
1994 05 15.96		M	9.5:	TI	13	L		8	69	2	6			HOR02
1994 05 15.96		S	9.8	AA	35	L		5	97	3.5	7			VAN04
1994 05 15.96		S	9.8	AC	20.0	L		4	42	4	4			SCH04
1994 05 15.98		S	9.5	AA	15	R		15	85	7	1.			DIE02
1994 05 15.98		S	10.2	TI	11	L		8	32	2.2	3			KYS
1994 05 15.99		S	9.7	AC	33.4	L		4	61	1	6			SZE02
1994 05 16.25		Y	9.4	SC	25	T		4		& 0.92		?	180	ROQ
1994 05 16.26		M	9.8	AA	30.5	R		15	176	2	7			AUG
1994 05 16.57		S	9.7	AC	10.0	B			25					SEA
1994 05 16.74		C	10.9	GA	60.0	Y		6		3.6			65	NAK01
1994 05 16.86		S	9.5	TI	5.6	R		14	40	3	2			DEM
1994 05 17.24		M	9.7	AA	30.5	R		15	176	1.5	7			AUG
1994 05 17.37		M	10.6	AC	41	L		4	83					HAL
1994 05 17.93		S	10.0	AC	15.2	L		5	42	3.0	1			MOE
1994 05 18.28		M	9.7	AA	30.5	R		15	82	1.5	7			AUG
1994 05 19.28		M	9.6	AA	30.5	R		15	176	2	6			AUG
1994 05 19.63		M	10.7	HS	16.0	W		4	49					TSU02
1994 05 19.75		S	9.9	NP	15.0	R		5	25	2.5	4/			NAG02
1994 05 20.33		M	10.5	GA	20.0	L		5	35	1.2	3			MOD
1994 05 27.26		S	9.7	AA	20	T		6	51	1.5	4			SPR
1994 05 27.74		S	9.8	AA	20	L		8	83		6			COO02
1994 05 27.86		S	10.6:	GA	11	L		7	40	2	3			BAR06
1994 05 27.88	!	V	11.0	YF	20.0	T		2		&10	7			MIK
1994 05 27.92		S	9.2	AC	15.2	L		5	42	4.5	0			MOE
1994 05 27.94		S	10.1	AC	20.0	T		10	78	2	3			COM
1994 05 28.06		S	10.5	GA	20	L		8	46	4	6			DID

Comet Takamizawa 1994i [cont.]

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 28.10		B	9.2	AA	8.0	B	4	11	4	2			NOW
1994 05 28.13		S	9.5	AC	31.7	L	6	68	2.3	5/	?		BOR
1994 05 28.16		M	10.8	GA	20.0	L	5	35	1.5	2/			MOD
1994 05 28.16		S	11.5	HS	33.3	L	4	56	2.0	6			KRO02
1994 05 28.77		S	9.5	AA	20	L	8	83		6			COO02
1994 05 28.89		S	10.7:	GA	11	L	7	40	& 2	3			BAR06
1994 05 28.92		S	9.2	AC	15.2	L	5	42	4.0	1			MOE
1994 05 28.95	!	S	9.8	AC	20	R	14	40	3.2	4			SHA02
1994 05 29.20		S	11.5	HS	33.3	L	4	56	2.2	6			KRO02
1994 05 29.26		C	9.7	SC	25	T	4						ROQ
1994 05 29.93		S	9.2	AC	15.2	L	5	42	4.5	1			MOE
1994 05 29.96		S	10.0	AA	8.0	B		11	3	8/			DES01
1994 05 29.97		S	10.3	AC	33.3	L	5	55	3.0	3			SHA02
1994 05 29.98		S	9.5:	AC	20.0	L	4	42	3	2			SCH04
1994 05 30.43		S	9.8	AA	10.0	B		25					SEA
1994 05 30.75		S	9.5	AA	20	L	8	83		6			COO02
1994 05 30.90		M	9.9:	TI	13	L	8	69	2.5	5/			HOR02
1994 05 30.91		S	9.3	AC	15.2	L	5	42	4.5	1			MOE
1994 05 30.92		M	10.1:	TI	10.0	B		25	3	2			ZNO
1994 05 30.92		S	9.8	GA	11	L	7	40	2	3			BAR06
1994 05 30.94		S	10.3:	AC	20.0	T	10	78	& 2	2			COM
1994 05 31.18		S	11.6	HS	33.3	L	4	56	2.3	5			KRO02
1994 05 31.73		S	9.8	AA	20	L	8	83		5			COO02
1994 05 31.93		S	10.3	AC	20.0	T	10	78	& 1.5	1/			COM
1994 05 31.95		S	10.1	AA	8.0	B		11	3	8			DES01
1994 06 01.00		S	10.6	AC	20	R	14	40	2.7	2			SHA02
1994 06 01.01		S	10.4	AC	33.3	L	5	85	1.6	3			SHA02
1994 06 01.09		S	10.3	GA	20	L	8	46	2	6			DID
1994 06 01.21		C	8.9	SC	25	T	4						ROQ
1994 06 01.48		S	10.8	HS	25.0	L	6	56					KON03
1994 06 01.59		C	11.0	GA	60.0	Y	6		3.3			90	NAK01
1994 06 01.63		S	9.9	AC	20	L	6	46	4.5				NAK01
1994 06 01.84		M	10.2:	TI	10.0	B		25	2.5	4			ZNO
1994 06 01.91		S	9.6:	AC	15.2	L	5	42	3.5	1			MOE
1994 06 01.91		S	9.8	GA	11	L	7	40	2.5	2/			BAR06
1994 06 01.93		S	10.3:	TI	5.6	R	14	40	2	1			DEM
1994 06 01.95		M	9.9	AC	33.4	L	4	61	2	5			SZE02
1994 06 02.28		S	9.8	AA	20	T	10	64	1.0	6/			SPR
1994 06 02.56		M	9.0	S	16.0	W	4	49		5			TSU02
1994 06 02.97		S	10.2	AA	8.0	B		11	2	8			DES01
1994 06 03.61		C	10.9	GA	10.0	A	4		4.7		0.22	85	NAK01
1994 06 03.89		M	9.8	AC	33.4	L	4	61	2.2	7			SZE02
1994 06 03.91		S	9.7	S	11	L	8	32	2.2	2/			KYS
1994 06 03.91		S	9.9	GA	11	L	7	40	2	3			BAR06
1994 06 03.92		S	9.5	AC	15.2	L	5	42	3.5	1			MOE
1994 06 03.97		S	10.3	AA	8.0	B		11					DES01
1994 06 04.14		M	10.7	GA	20.0	L	5	35	2.0	3			MOD
1994 06 04.14		S	9.6	AC	31.7	L	6	68	3.2	6			BOR
1994 06 04.20		S	11.5	HS	33.3	L	4	56	2.3	7			KRO02
1994 06 04.95	!	S	10.8	AC	33.3	L	5	85	1.8	3			SHA02
1994 06 05.18		M	10.9	GA	20.0	L	5	35	2.0	2/			MOD
1994 06 05.31	!	M	10.6	AC	41	L	4	83					HAL
1994 06 05.92		S	9.6	AC	15.2	L	5	42	3.0	1			MOE
1994 06 06.96		B	9.8	CS	20.3	T	10	62	1.0	6	0.12	85	GAR02
1994 06 07.75		S	9.6	AA	20	L	8	83		5			COO02
1994 06 07.90		S	9.6	S	10.0	B		25	1.6	3			HAS02
1994 06 08.17		C	9.9	SC	25	T	4						ROQ
1994 06 08.28		S	9.6	AA	20	T	10	64	2.0	3/			SPR
1994 06 08.87		M	9.8	AC	44.5	L	4	146	1.2	7	0.1	130	SAR02

Comet Takamizawa 1994i [cont.]

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 08.87		M	9.9	AC	44.5	L	4	146	0.8	6	0.1	150	BAK01
1994 06 08.92		S	10.9	TI	11	L	8	32	1.8	2			KYS
1994 06 09.14		S	9.9	AC	31.7	L	6	68	2.4	6	?		BOR
1994 06 09.48		S	10.2	AA	10.0	B		25					SEA
1994 06 10.46		S	10.4	AC	25.4	L	4	71					SEA
1994 06 11.43		S	10.1	AC	10.0	B		25					SEA
1994 06 11.87		S	10.4	AA	8.0	B		11	3	8/			DES01
1994 06 12.16		Y	9.9	SC	25	T	4		& 1		?	90	ROQ
1994 06 12.89		S	11.3:	TI	11	L	8	54	2	2			KYS
1994 06 12.90		M	10.0:	TI	13	L	8	69	2.5	2/			HOR02
1994 06 12.91		S	10.4	AA	20.0	C	10	166	3	7			DES01
1994 06 14.91		I	11.0:	TI	10	B		25	2	3			KYS
1994 06 15.16		c	15.8	FA	91.4	L	5		4.5		&0.08	100	SCO01
1994 06 15.27	!	S	10.8	AC	20	L	6	55					HAL
1994 06 15.53		C	11.6	GA	60.0	Y	6		2.2			100	NAK01
1994 06 15.54		C	11.3	GA	10.0	A	4		3.8		0.23	77	NAK01
1994 06 22.19		Y	10.9	SC	25	T	4		& 0.75		?	120	ROQ

Periodic Comet Encke (1990 XXI)

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1990 08 24.12		S	13.5:	AC	45.0	L	4	119	1.0	0/			BOU
1990 08 26.10		S	13.0	AC	106.0	L	3	179	1.1	0/			BOU
1990 08 28.10		S	12.9	AC	25.4	J	6	88	1.0	1			BOU
1990 09 26.13		S	8.5	AC	25.4	J	6	58	3	4			BOU
1993 11 17.83		S[	13.0	AC	25.4	J	6	143	! 1.0				BOU
1993 12 04.83		S	12.7	AC	25.4	J	6	115	1.1	0			BOU
1993 12 07.77		S	12.5	AC	25.4	J	6	115	1.3	0/			BOU
1993 12 13.76		[	12.5:		25	L	6	150					REN
1993 12 14.75	a	S	11.6	AC	25.4	J	6	115	1.6	1			BOU
1993 12 31.79		S	9.8	AC	25.4	J	6	58	3.5	0/			BOU
1994 01 01.76	a	S	9.5	AC	25.4	J	6	58	3.2	1			BOU
1994 01 03.77		B	10.5	VF	12	L	6	40	& 3	3			REN
1994 01 06.76		B	10.3	VF	12	L	6	40	3.5	3			REN
1994 01 09.74		S	8.7	AA	25.4	J	6	58	3.5	3/			BOU
1994 01 09.75		S	8.7	AA	8.0	B		15	4.5	1			BOU
1994 01 10.76		B	9.7	VF	12	L	6	40	4	3			REN
1994 01 14.77		B	9.3	VF	12	L	6	40	4	4/			REN
1994 01 16.73		M	8.0	AA	25.4	J	6	58	3	5			BOU
1994 01 17.73		S	8.0	AA	15.6	L	5	29	3.5	4/			BOU
1994 01 19.78		S	7.5:	AA	20	R	14	40	6	3			LAN03
1994 01 22.73		S	7.4	HR	15.6	L	5	29	4.5	6			BOU
1994 01 23.74		M	7.3	HR	15.6	L	5	29	4.5	6/			BOU
1994 01 23.75		S	6.8	S	7.0	B		16	6	3			TAY
1994 01 23.75		S	7.8	S	21	L	5	37	4	2			TAY
1994 01 25.73		S	7.0	AA	15.6	L	5	29		6/			BOU
1994 01 29.76		B	7 :	A	12	L	6	40	1.5	4/			REN
1994 06 14.45		c	21.6	FA	91.4	L	5				&0.02	239	SCO01
1994 06 14.46		C	19.0	FA	91.4	L	5						SCO01

Periodic Comet Tempel 1 (1993c)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 02 10.45	S	13.4	AC	41	L	4	183					HAL
1994 02 17.03	S	13.3	AC	25.4	J	6	115	0.9	1			BOU
1994 02 18.05	S	13.3	AC	25.4	J	6	115	0.8	1/			BOU
1994 02 19.09	S	13.2	AC	25.4	J	6	115	0.9	1/			BOU
1994 03 02.99	S	12.6	AC	25.4	J	6	115	1.5	1/			BOU
1994 03 06.03	S	12.4	AC	25.4	J	6	115	1.8	2			BOU

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 03 10.29	M	12.6	AC	41	L	4	83					HAL
1994 03 10.96	S	12.1	AC	25.4	J	6	88	1.8	2			BOU
1994 03 15.97	S	11.8	AC	25.4	J	6	72	1.8	4			BOU
1994 03 16.93	S	12.1	AC	28.0	T	10	108		1			COM
1994 03 20.00	S	12.5	AC	30.0	L	5	92	1	6			SCH04
1994 03 20.07	S	11.5	AC	25.8	L	5		1.0	5			FEI
1994 03 22.39	M	12.5	GA	35.9	L	7	85	0.8	4			MOD
1994 03 29.87	S[	12.0	VB	30	R	18	230					SHA02
1994 03 30.86	S	10.7	AC	13.0	L	6	36	2	0/			MEY
1994 03 30.88	S	11.8	HS	44.5	L	4	100	0.5	7	0.04	220	HAS02
1994 03 31.92	S	11.1:	GA	11	L	7	40	& 1	3			BAR06
1994 04 01.13	S	11.5	GA	20	L	8	130	3	3			DID
1994 04 01.86	S	11.5	AA	20	L	8	83	0.2	3			COO02
1994 04 01.89	S	10.7	AC	28.0	T	10	112	& 2	3			COM
1994 04 01.92	S	11.3	VB	30	R	18	230	0.8	4			SHA02
1994 04 02.82	S	11.2	AA	20	L	8	83	0.25	2			COO02
1994 04 02.88	S	10.9	GA	25.4	J	6	72	2.5	3/			BOU
1994 04 03.83	S	11.5	AA	20	L	8	83					COO02
1994 04 03.87	B	12.3	HS	25	L	15	139	4	4			STE10
1994 04 04.33	M	12.2	GA	35.9	L	7	85	0.8	4			MOD
1994 04 04.85	S	11.0	AA	20	L	8	83		4			COO02
1994 04 04.98	S	10.9:	GA	11	L	7	40	& 1.5	4			BAR06
1994 04 05.05	S	10.8:	VB	20	R	14	40	3.3	4			SHA02
1994 04 05.07	S	10.8:	GA	11	L	7	40	& 3	3			BAR06
1994 04 05.54	S	11.6	AC	20	L	6	50	2	2			KAM03
1994 04 05.87	S	10.6	GA	25.4	J	6	72	2.5	4			BOU
1994 04 05.88	S	10.7	AC	28.0	T	10	108	1.5	3			COM
1994 04 05.90	S	10.3	AC	30.0	L	5	92	& 2	6/			SCH04
1994 04 05.92	S	11.6	VB	20	R	14	155	1.7	2			SHA02
1994 04 06.30	M	11.1	AC	41	L	4	83					HAL
1994 04 06.91	S	10.7	AC	25.8	L	5		0.8	6			FEI
1994 04 06.92	S	10.7	AC	28.0	T	10	108	& 1.5	2/			COM
1994 04 06.93	S	10.6	GA	25.4	J	6	72	2.5	4			BOU
1994 04 07.93	S	11.3	TI	25	L	6	60	1.5	5			KYS
1994 04 07.95	B	10.9	TI	10.0	B		25	2	5			KYS
1994 04 08.10	S	10.3	AC	31.7	L	6	68	2.3	7			BOR
1994 04 08.34	M	11.7	GA	35.9	L	7	85	1.0	4			MOD
1994 04 08.88	S	10.8	GA	11	L	7	40	3.9	4			BAR06
1994 04 08.88	S	11.5	AA	20	L	8	83	0.25	3			COO02
1994 04 08.94	S	10.1	AC	10	B		14	2.0	4			SHA02
1994 04 08.94	S	10.7	AC	30	R	18	95	1.7	5			SHA02
1994 04 09.10	S	10.2	AC	31.7	L	6	68	2.6	7			BOR
1994 04 09.10	S	10.5	GA	20	L	8	46	4	9			DID
1994 04 09.97	S	11.0	AC	25.2	L	4	53	1	4			LOO01
1994 04 10.00	S	10.7	GA	11	L	7	40	2	4			BAR06
1994 04 10.82	S	11.2	AA	20	L	8	83					COO02
1994 04 10.96	S	10.8	GA	11	L	7	40	2	4			BAR06
1994 04 10.98	S	10.8	AA	50.0	C	10	166	4	7/			DES01
1994 04 11.53	S	10.8	AC	20	L	6	50	3	3			KAM03
1994 04 11.89	S	10.2	AC	28.0	T	10	108	& 2	3/			COM
1994 04 11.89	S	10.4	GA	25.4	J	6	58	2.7	4			BOU
1994 04 12.05	S	10.8	AC	30	R	18	95	1.6	4			SHA02
1994 04 12.81	S	11.0	AA	20	L	8	83					COO02
1994 04 12.90	S	10.3	AC	28.0	T	10	108	& 2	3/			COM
1994 04 13.49	S	10.8	AC	20	L	6	50	2	3			KAM03
1994 04 13.94	S	10.5	AC	20	R	14	40	2	2			LAN03
1994 04 14.51	S	10.7	AC	20	L	6	50	2	3			KAM03
1994 04 14.83	S	10.8	AA	20	L	8	83		5			COO02
1994 04 14.86	S	10.2	TI	11	L	8	32	1.5	4			KYS

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 15.09	S	10.3	GA	20	L	8	46	3	0			DID
1994 04 15.51	M	10.4	AC	20	L	6	50	2	3			KAM03
1994 04 15.85	S	10.2	TI	11	L	8	32	1.5				KYS
1994 04 16.11	S	9.7	GA	20	L	8	46	4	7			DID
1994 04 16.29	M	10.4	AC	20	L	6	55					HAL
1994 04 16.50	S	10.5	AC	20	L	6	50	3	2			KAM03
1994 04 16.65	S	10.3	AC	25	L	6	57	2.2	5			WAT01
1994 04 17.12	S	9.8	AC	31.7	L	6	68	2.4	7			BOR
1994 04 17.30	M	11.4	GA	20.0	L	5	35	1.5	4			MOD
1994 04 17.33	M	11.5	GA	35.9	L	7	85	1.3	5			MOD
1994 04 18.04	S	10.1	GA	25.4	J	6	72	3.0	4			BOU
1994 04 18.06	S	9.8	AC	20.0	T	10	78	& 1.5	3			COM
1994 04 18.36	M	11.4	GA	20.0	L	5	35	1.5	4			MOD
1994 04 19.82	S	11.1	TI	11	L	8	54	2	3			KYS
1994 04 19.91	M	10.6	HS	20.0	R	17	87	2	2			LEH
1994 04 20.08	S	10.1	GA	25.4	J	6	58	3.0	4/			BOU
1994 04 20.31	M	11.1	GA	20.0	L	5	35	2.0	4			MOD
1994 04 20.82	M	10.0	TI	10.0	B		25	2	4			ZNO
1994 04 20.84	M	10.6	HS	20.0	R	17	87	2	2			LEH
1994 04 21.91	M	10.4	HS	20.0	R	17	87	1.5	2			LEH
1994 04 27.84	M	10.1	S	10.0	B		25	3	3			KUB
1994 04 27.85	M	9.9	S	10.0	B		25	3	4			ZNO
1994 04 28.49	S	9.8	NP	15.0	R	5	25	3	4			NAG02
1994 04 28.76	S	11.0	AA	20	L	8	83					COO02
1994 04 28.83	M	9.7	TI	13	L	8	69	3	3/			HOR02
1994 04 28.88	M	9.8:	TI	10.0	B		25	2.8				FAB
1994 04 28.89	S	9.6	AC	20.0	T	10	78	& 2	3			COM
1994 04 28.93	S	9.7	GA	25.4	J	6	58	3.0	4/			BOU
1994 04 29.17	M	10.4	AC	20	L	6	55					HAL
1994 04 29.84	B	9.8:	S	10.0	B		25	3	4			ZNO
1994 04 29.86	S	9.4	AA	8.0	B	5	20	3	3			MIL02
1994 04 29.87	S	9.9	S	5.6	R	14	40	2	1			DEM
1994 04 29.90	S	10.5	HS	20.3	T	10	112	1.0	5			KAM01
1994 04 30.52	S	10.2	HS	40.0	L	6	80	3.5	4		225	KOB01
1994 04 30.75	S	10.4	AA	20	L	8	83	0.5	5			COO02
1994 04 30.91	S	9.5	AC	11.0	L	7	54	5	4			SCH04
1994 04 30.91	S	9.9	AC	20	R	14	40	3.1	3			SHA02
1994 05 01.00	S	10.2	AA	8.0	B		20	5				LOU
1994 05 01.03	S	10.3	AC	20	R	14	40	2.5	2			LAN03
1994 05 01.05	S	9.9	AC	33.3	L	5	120	2.5	4			SHA02
1994 05 01.25	S	8.9	AA	20	T	10	51	3.0	5/			SPR
1994 05 01.76	S	10.5	AA	20	L	8	83		5			COO02
1994 05 01.92	S	10.3	AA	8.0	B		11		8			DES01
1994 05 01.92	S	10.8	AC	25.2	L	4	53	1	6/			LOO01
1994 05 01.94	S	10.3	AC	20	R	14	155	1.8	3			SHA02
1994 05 02.00	S	10.2	AA	8.0	B		20	5				LOU
1994 05 02.10	S	9.8	AC	31.7	L	6	68	& 2	6/			BOR
1994 05 02.18	M	9.4	AA	30.5	R	15	176	2.5	7			AUG
1994 05 02.19	M	9.5	AA	30.5	R	15	176	2	7			VOG
1994 05 02.84	M	10.2	TI	13	L	8	69	3.9	4			HOR02
1994 05 02.84	M	10.4	S	10.0	B		25	3	3			ZNO
1994 05 02.85	M	10.1	AC	33.4	L	4	61	1	7	0.01	230	SZE02
1994 05 02.88	M	10.2	TI	10	B		25	1.5	6			KUB
1994 05 02.88	S	9.6:	AC	13.0	L	6	36	& 3.5	5			MEY
1994 05 02.88	S	10.2	HS	20.3	T	10	93	1.0	4			HAS02
1994 05 02.88	S	10.5	AC	15.2	L	5	42	2.5	3			MOE
1994 05 02.90	S	9.4	AC	11.0	L	7	54	3	6			SCH04
1994 05 02.91	S	9.3	AA	30.5	L	5	117	3	7	0.1	200	VIC
1994 05 02.92	S	9.5	GA	25.4	J	6	58	3.0	5			BOU

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 02.92	S	10.3	AC	25.2	L	4	53	1.7	6			LOO01
1994 05 02.92	S	10.8	GA	11	L	7	40	2.7	4			BAR06
1994 05 02.93	S	10.2	AA	8.0	B		11		7			DES01
1994 05 02.96	S	10.6	HS	20.3	T	10	112	1.0	5			KAM01
1994 05 03.08	S	9.6	AC	31.7	L	6	68	2.3	7	?		BOR
1994 05 03.08	S	9.8	GA	20	L	8	46	3	3			DID
1994 05 03.20	M	11.2	GA	35.9	L	7	85	1.3	4/			MOD
1994 05 03.26	S	8.9	AA	20	T	10	64	3.0	5			SPR
1994 05 03.41	S	10.3	LM	20.3	L	7	56	3	2			CAM03
1994 05 03.78	S	10.4	AA	20	L	8	83		5			COO02
1994 05 03.85	S	9.6	S	10.0	B		25	6	6			SPU
1994 05 03.87	S	10.4	GA	11	L	7	40	3.2	4			BAR06
1994 05 03.92	S	10.4	AC	15.2	L	5	42	2.0	4			MOE
1994 05 03.95	S	10.2	AA	8.0	B		11		7			DES01
1994 05 03.99	S	10.5	AC	20	R	14	40	2.5	2			LAN03
1994 05 04.42	S	10.3	LM	20.3	L	7	35	2	1			CAM03
1994 05 04.42	S	10.3	LM	20.3	L	7	56	1	2			CAM03
1994 05 04.54	S	10.2	AA	10.0	B		25	3	4			SEA
1994 05 04.85	S	10.0	S	5.6	R	14	40	2	2			DEM
1994 05 04.88	S	9.0	AA	15	R	15	85	2	6			DIE02
1994 05 04.89	S	10.4	GA	11	L	7	40	3.4	4			BAR06
1994 05 04.90				33.4	L	4	214	2.5	6	0.05	190	SZE02
1994 05 04.90	M	9.8	AC	33.4	L	4	61					SZE02
1994 05 05.00	S	10.0	AA	8.0	B		20	5				LOU
1994 05 05.15	S	10.3	HS	33.3	L	4	56	2.1	6			KRO02
1994 05 05.41	S	10.3	LM	20.3	L	7	35	2	2			CAM03
1994 05 05.41	S	10.3	LM	20.3	L	7	56	1	3			CAM03
1994 05 05.86	S	10.1	GA	11	L	7	40	2.5	3			BAR06
1994 05 05.96	S	10.1	AA	8.0	B		11	3	7			DES01
1994 05 05.99	S	9.4	AC	25.4	J	6	61	2.0	5			FEI
1994 05 06.05	S	9.9	GA	20	L	8	46	3	3			DID
1994 05 06.08	S	9.5	AC	31.7	L	6	68	3.2	6	?		BOR
1994 05 06.15	S	10.4	HS	33.3	L	4	56	2.4	6			KRO02
1994 05 06.27	S	9.0	AA	20	T	10	64	2.5	5			SPR
1994 05 06.53	S	10.1	HS	40.0	L	6	80	3.5	4			KOB01
1994 05 06.55	C	10.7	GA	60.0	Y	6		3.9				NAK01
1994 05 06.62	C	11.4	HS	20.0	L	6		0.9				ITO02
1994 05 06.77	S	10.2	AA	20	L	8	83	0.5	4			COO02
1994 05 06.88	S	9.1	AC	13.0	L	6	36	4	3			MEY
1994 05 06.90	S	9.8	S	10.0	B		25	2.5	3			KYS
1994 05 06.99	S	10.1	AA	8.0	B		11	3	6/			DES01
1994 05 07.24	M	11.0	GA	20.0	L	5	35	2.0	3			MOD
1994 05 07.27	S	8.9	AA	20	T	10	64	3.0	4			SPR
1994 05 07.44	S	10.1	AA	10.0	B		25					SEA
1994 05 07.88	M	9.8	AA	33.4	L	4	61	2.5	7			SZE02
1994 05 07.88	M	9.8	S	10	B		25	3	4			KUB
1994 05 07.88	M	10.0	TI	10.0	B		25	2	3			FAB
1994 05 07.88	M	10.4	TI	10.0	B		25	4	2			ZNO
1994 05 07.88	S	10.3	GA	11	L	7	40	2.5	3			BAR06
1994 05 07.89	M	9.9	TI	13	L	8	69	3	4			DVO
1994 05 07.90	M	9.6	TI	13	L	8	69	3.8	4/			HOR02
1994 05 07.90	S	9.0	AA	15	R	15	85	3	8			DIE02
1994 05 07.90	S	10.2	AC	25.2	L	4	53	2.3	3/			LOO01
1994 05 07.91	S	9.2	AC	13.0	L	6	36	4	4			MEY
1994 05 07.92	S	9.7	S	10.0	B		25	3	5			KYS
1994 05 07.93	S	9.3	AC	25.4	J	6	61	2.0	4/			FEI
1994 05 07.94	S	9.2	AC	20.0	L	4	42	4	5			SCH04
1994 05 07.94	S	9.4	AC	6.0	B		20	3.5	1			SAR02
1994 05 07.95				44.5	L	4	146	1.5	8	0.07	200	SAR02

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 08.10	S	10.0	AA	8.0	B		11	4	6			DES01
1994 05 08.16	S	10.4	HS	33.3	L	4	56	2.3	5			KRO02
1994 05 08.28	S	9.0	AA	10	R	5	17	3.0	4			SPR
1994 05 08.48	S	9.7	NP	15.0	R	5	25	4	3/			NAG02
1994 05 08.53	S	10.0	HS	25.0	L	6	56	3	5			KON03
1994 05 08.88	B	9.9	S	10.0	B		25	2.5	4			KYS
1994 05 08.88	M	10.0	S	10	B		25	3	5			KUB
1994 05 08.88	S	9.8	AC	15.2	L	5	42	3.5	3			MOE
1994 05 08.91	S	9.6	GA	11	L	7	40	3	4			BAR06
1994 05 08.96	S	9.0	AC	13.0	L	6	36	4.5	4			MEY
1994 05 08.96	S	9.4	AC	6.0	B		20	4	3			SAR02
1994 05 08.98				44.5	L	4	230	1.2	7/	0.08	185	SAR02
1994 05 08.98	M	9.7	AC	44.5	L	4	75					SAR02
1994 05 08.98	S	10.3	AC	20	R	14	40	2.1	2			SHA02
1994 05 09.04	S	10.0	AA	8.0	B		11	4	6			DES01
1994 05 09.38	M	10.2	NP	20	L	6	55					HAL
1994 05 09.76	S	10.5	AA	20	L	8	83					COO02
1994 05 09.89	S	9.8	AC	15.2	L	5	42	3.5	3			MOE
1994 05 09.91	S	10.5	AC	20	R	14	40	1.5	3			LAN03
1994 05 09.93	S	8.9	AC	25.4	J	6	61	2.0	4			FEI
1994 05 09.99	S	9.6	AC	20	R	14	40	2.6	4			SHA02
1994 05 10.14	S	10.3	HS	33.3	L	4	56	2.7	6			KRO02
1994 05 10.88	S	9.7	AC	15.2	L	5	42	3.5	4			MOE
1994 05 10.88	S	9.8	GA	11	L	7	32	3	4			BAR06
1994 05 10.97	S	9.1	AC	13.0	L	6	36	4.5	4			MEY
1994 05 11.09	S	9.9	GA	20	L	8	46	3	6	?	210	DID
1994 05 11.10	S	9.5	AC	31.7	L	6	68	2.9	6	?		BOR
1994 05 11.16	S	10.1	HS	33.3	L	4	56	2.8	5			KRO02
1994 05 11.19	M	10.0	AA	30.5	R	15	143	3	6			AUG
1994 05 11.26	M	11.0	GA	20.0	L	5	35	2.2	3/			MOD
1994 05 11.27	S	8.9	AA	20	T	6	40	2.5	4/			SPR
1994 05 11.39	S	10.0	LM	20.3	L	7	35	2	2			CAM03
1994 05 11.39	S	10.0	LM	20.3	L	7	56	1	3			CAM03
1994 05 11.87	S	9.4	GA	11	L	7	40	3	3/			BAR06
1994 05 11.87	S	9.9	S	11	L	8	32	2	4			KYS
1994 05 11.89	S	9.0	AC	13.0	L	6	36	4.5	4/			MEY
1994 05 11.92	S	9.3	AC	20.0	L	4	42	6	5			SCH04
1994 05 11.92	S	10.1	AC	25.2	L	4	53	2.3	4			LOO01
1994 05 11.93	S	9.8	AA	20.3	T	10	77	2.0	4			KAM01
1994 05 12.01	S	9.9	AA	8.0	B		11	5	6			DES01
1994 05 12.23	M	9.8	AA	30.5	R	15	176	3.5	6			AUG
1994 05 12.39	S	10.0	LM	20.3	L	7	56	2	2			CAM03
1994 05 12.88	S	10.1	S	11	L	8	32	2	4			KYS
1994 05 12.94	S	8.9	AC	25.4	J	6	61	2.0	4			FEI
1994 05 12.95	S	8.9:	AC	13.0	L	6	36	& 3	4			MEY
1994 05 12.97	S	10.0	AC	20.0	L	4	42	& 3	6/			SCH04
1994 05 13.10	S	9.3	AC	31.7	L	6	68	3.2	6	?		BOR
1994 05 13.20	M	9.7	AA	30.5	R	15	176	3	6			AUG
1994 05 13.26	M	11.0	GA	20.0	L	5	35	2.0	3			MOD
1994 05 13.42	S	10.1	AA	10.0	B		25					SEA
1994 05 13.73	S	10.3	AA	20	L	8	83					COO02
1994 05 13.85	S	10.0	S	11	L	8	54	2	3			KYS
1994 05 13.88	S	9.1	AC	13.0	L	6	36	3.5	4			MEY
1994 05 13.92	S	9.5	AC	10.0	B		25		5			HAS02
1994 05 13.93	S	9.4	AA	30.5	L	5	117	3	7	0.1	195	VIC
1994 05 13.93	S	11.0	AC	30	R	18	230	1.1	3			SHA02
1994 05 13.99	S	9.2	AC	20.0	L	4	42	3	6			SCH04
1994 05 14.11	S	9.5	AC	31.7	L	6	68	2.9	6	?		BOR
1994 05 14.19	B	10.5	AA	15	L	5	40	1	6			NOW

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR		COMA	DC	TAIL	PA	OBS.
1994 05 14.22	M	10.9	GA	20.0	L	5	35		2.0	3			MOD
1994 05 14.43	S	10.0	AC	10.0	B		25						SEA
1994 05 14.67	B	10.2	AC	13.0	H	3	24		1.8	5			OHM
1994 05 14.86	S	9.0	AC	25.4	J	6	61		2.0	5			FEI
1994 05 14.91	S	9.2	GA	11	L	7	40		3.6	3			BAR06
1994 05 14.99	S	9.9	CS	8.0	B		11		3.5	3			GAR02
1994 05 15.77	S	10.4	AA	20	L	8	83						COO02
1994 05 15.87	S	9.7	AC	33.4	L	4	61		1.4	6			SZE02
1994 05 15.90	B	9.7	S	11	L	8	54		2.7	2			KYS
1994 05 15.92	S	8.7	AA	15	R	15	85		6	2			DIE02
1994 05 15.93	S	9.2	AC	20.0	L	4	42		4	6			SCH04
1994 05 15.94	S	10.3	AC	25.2	L	4	53		1.7	4			LOO01
1994 05 15.95	M	9.6	TI	13	L	8	69		2.7	3			HOR02
1994 05 16.14	M	9.6	AA	30.5	R	15	176		3	5			AUG
1994 05 16.59	S	9.8	AC	33	L	5	74		3	5			MOR06
1994 05 16.84	M	9.4	S	10.0	B		25		3.5	3			ZNO
1994 05 16.84	S	9.2	S	5.6	R	14	40		3	3			DEM
1994 05 16.98	S	9.6:	GA	11	L	7	40	&	3	3			BAR06
1994 05 17.02	S	9.7	AA	8.0	B		11		6	5/			DES01
1994 05 17.21	M	9.7	AA	30.5	R	15	176		3	4			AUG
1994 05 17.32	M	10.0	AC	41	L	4	83						HAL
1994 05 17.88	S	9.7	AC	15.2	L	5	42		3.0	3			MOE
1994 05 17.97	S	9.8	AA	8.0	B		20		5	4/			LOU
1994 05 18.00	S	9.5	AA	15	R	15	85		6	2			DIE02
1994 05 18.04	S	9.7	AA	8.0	B		11		6	5/			DES01
1994 05 18.26	M	9.6	AA	30.5	R	15	82		3	4			AUG
1994 05 18.99	S	9.8	AA	8.0	B		20		5	4/			LOU
1994 05 19.02	S	9.6	AA	8.0	B		11		6	5/			DES01
1994 05 19.26	M	9.8	AA	30.5	R	15	176		2	3			AUG
1994 05 19.99	S	9.8	AA	8.0	B		20		5	4/			LOU
1994 05 20.24	S	8.9	AA	20	T	10	125		1.5	4/			SPR
1994 05 26.90	S	9.4	AC	15.2	L	5	42		3.0	3			MOE
1994 05 27.25	S	9.6	AA	20	T	6	80		4.0	2			SPR
1994 05 27.71	S	10.5	AA	20	L	8	83			5			COO02
1994 05 27.89	S	9.4	AC	15	L	15	56		4.5	2			SAR02
1994 05 27.91	S	9.5	AC	15.2	L	5	42		3.0	3			MOE
1994 05 27.93	S	9.5	AC	20.0	T	10	78	&	1.5	3			COM
1994 05 28.12	S	9.3	AC	31.7	L	6	68		3.0	5	?		BOR
1994 05 28.13	S	10.1:	HS	33.3	L	4	56	&	2.0	4			KRO02
1994 05 28.15	M	10.7	GA	20.0	L	5	35		1.6	3			MOD
1994 05 28.54	S	9.4	S	15.0	R	5	25		4	4			NAG02
1994 05 28.77	S	9.8	AA	20	L	8	83						COO02
1994 05 28.91	S	9.6	AC	15.2	L	5	42		3.0	3			MOE
1994 05 28.91	S	9.6:	AA	11	L	7	40		3.5	3			BAR06
1994 05 28.93	S	9.9	AC	20	R	14	40		3.9	2			SHA02
1994 05 28.97	S	9.5	AA	8.0	B		11		5	6			DES01
1994 05 29.18	S	10.3	HS	33.3	L	4	56		2.8	4			KRO02
1994 05 29.22	C	10.1	SC	25	T	4							ROQ
1994 05 29.46	S	9.5	AA	10.0	B		25						SEA
1994 05 29.87	S	9.8:	GA	11	L	7	40		3.0	2			BAR06
1994 05 29.90	S	9.5	AA	8.0	B		11		5	5			DES01
1994 05 29.92	S	9.3	AC	15.2	L	5	42		3.0	2			MOE
1994 05 29.93	S	9.4	AC	20.0	L	4	42		4	6			SCH04
1994 05 29.94	S	9.7	AA	15	R	15	85		5	2			DIE02
1994 05 29.96	S	9.8	AC	33.3	L	5	55		2.9	3			SHA02
1994 05 30.02	S	10.0	AC	20	R	14	40		3	2			LAN03
1994 05 30.15	S	9.3	AC	31.7	L	6	68		3.7	5	?		BOR
1994 05 30.43	S	9.6	AA	10.0	B		25						SEA
1994 05 30.73	S	10.0	AA	20	L	8	83			4			COO02

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 30.86	S	9.6	S	11	L	8	54	3	3			KYS
1994 05 30.87	M	10.2:	TI	13	L	8	69	3.2	3			HOR02
1994 05 30.88	M	9.4	TI	10.0	B		25	3.5	3			ZNO
1994 05 30.90	M	10.2	TI	15	R	15	56	2.5	3			KUB
1994 05 30.90	S	9.4	AC	15.2	L	5	42	3.0	3			MOE
1994 05 30.94	S	9.7	AA	15	R	15	85	5	2			DIE02
1994 05 30.94	S	9.8	AC	20.0	T	10	78	& 2	2/			COM
1994 05 30.98	S	9.7	AA	8.0	B		20	5	4			LOU
1994 05 31.16	S	9.9:	HS	33.3	L	4	56	& 2.3	3			KRO02
1994 05 31.71	S	9.8	AA	20	L	8	83		5			COO02
1994 05 31.87	S	9.5	AA	10.0	B		25	1.2	4			HAS02
1994 05 31.91	S	10.3	AC	20.3	T	10	50	1.6	2/			KAM01
1994 05 31.93	S	9.7	AC	20.0	T	10	78	& 1.5	2			COM
1994 05 31.95	S	9.4	AA	8.0	B		11	5	6			DES01
1994 05 31.97	S	10.3	AC	20	R	14	40	2.7	2			SHA02
1994 06 01.19	C	10.3	SC	25	T	4						ROQ
1994 06 01.62	S	9.7	AC	20	L	6	46	3				NAK01
1994 06 01.85	M	9.6	TI	10.0	B		25	3	3			ZNO
1994 06 01.86	S	9.2	AA	10	L	10	74	5	0			KIS02
1994 06 01.87	S	9.2	AC	33.4	L	4	61	6	5	0.1	175	SZE02
1994 06 01.89	S	9.7	GA	11	L	7	40	4	3			BAR06
1994 06 01.91	S	9.5	AC	15.2	L	5	42	3.0	3			MOE
1994 06 01.91	S	10.1	TI	5.6	R	14	40	3	1			DEM
1994 06 01.96	S	9.4	AA	8.0	B		11	6	5/			DES01
1994 06 02.13	S	9.3	AC	31.7	L	6	68	3.8	5	?		BOR
1994 06 02.27	S	9.9	AA	20	T	10	64	4.0	2			SPR
1994 06 02.53	M	9.1	S	16.0	W	4	49		4			TSU02
1994 06 02.96	S	9.8	AC	20.0	T	10	78	& 1	2			COM
1994 06 02.97	S	9.4	AA	8.0	B		11	5	5/			DES01
1994 06 03.12	S	9.3	AC	31.7	L	6	68	3.8	5	?	160	BOR
1994 06 03.53	S	9.4	S	15.0	R	5	25	4.5	3/			NAG02
1994 06 03.54	C	10.7	GA	60.0	Y	6		3.4			150	NAK01
1994 06 03.88	S	9.1	AA	33.4	L	4	61	9	5			SZE02
1994 06 03.88	S	9.8	GA	11	L	7	40	3	2			BAR06
1994 06 03.90	S	9.3	S	11	L	8	32	3	2			KYS
1994 06 03.90	S	9.5	AA	30.5	L	5	117	3	7	0.03	140	VIC
1994 06 03.91	S	9.5	AC	15.2	L	5	42	3.5	3			MOE
1994 06 03.93	S	9.7:	TI	5.6	R	14	40	3.5	1			DEM
1994 06 03.95	S	9.4	AA	8.0	B		11	6	6			DES01
1994 06 04.10	S	10.1	GA	20	L	8	46	3	1			DID
1994 06 04.12	M	10.4	GA	20.0	L	5	35	2.4	3			MOD
1994 06 04.13	S	9.3	AC	31.7	L	6	68	3.4	4/	?		BOR
1994 06 04.15	S	10.3	HS	33.3	L	4	56	2.5	4			KRO02
1994 06 04.96	S	9.7	AC	33.3	L	5	55	2.5	1			SHA02
1994 06 05.15	M	10.5	GA	20.0	L	5	35	2.4	2/			MOD
1994 06 05.21	S	9.4	NP	5.0	B		10					HAL
1994 06 05.99	S	9.3	AA	8.0	B		11	5	5			DES01
1994 06 06.94	B	9.4	S	20.3	T	10	62	1.8	3			GAR02
1994 06 07.75	S	9.6	AA	20	L	8	83		5			COO02
1994 06 07.85	M	9.7	TI	10	B		25	3.5	3/			ZNO
1994 06 07.88	M	9.4	AA	44.5	L	4	146	2.5	5	0.13	120	SAR02
1994 06 07.88	M	9.5	AA	44.5	L	4	146	4	6	0.15	110	TOT02
1994 06 07.92	S	10.4	AC	20.3	T	10	80	1.9	3			KAM01
1994 06 08.27	S	9.8	AA	20	T	10	64	3.5	2/			SPR
1994 06 08.86	B	9.0	S	25.0	L	4	33	8	2			KRY01
1994 06 08.88	M	9.4	AA	44.5	L	4	146	2	5			BAK01
1994 06 08.88	M	9.4	AA	44.5	L	4	146	2.5	5/	0.1	145	SAR02
1994 06 08.89	S	9.8:	S	11	L	8	54	2				KYS
1994 06 08.98	S	10.1	AC	20.0	T	10	78	& 1	2			COM

Periodic Comet Tempel 1 (1993c) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 09.13	S	9.3	AC	31.7	L	6	68	2.7	4			BOR
1994 06 09.19	C	11.2	SC	25	T	4		0.75		?	160	ROQ
1994 06 09.47	S	9.6	AA	10.0	B		25					SEA
1994 06 10.13	S	9.3	AC	31.7	L	6	68	3.7	4			BOR
1994 06 11.13	S	10.5	GA	20	L	8	46	3	0			DID
1994 06 12.45	S	9.4	AA	10.0	B		25					SEA
1994 06 12.90	S	9.7	S	11	L	8	32	2.5	2/			KYS
1994 06 13.17	Y	11.8	SC	25	T	4		0.5		&0.67	140	ROQ
1994 06 14.23	c	16.7	FA	91.4	L	5		8.5		&0.14	119	SCO01
1994 06 14.92	S	9.6	S	10	B		25	2.5				KYS
1994 06 14.95	B	9.8	S	10	B		25	2.5	3			KYS
1994 06 14.95	S	9.4	AC	20.0	L	4	42	& 5	0			SCH04
1994 06 15.29	! S	9.5	NP	20	L	6	55					HAL
1994 06 21.85	M	9.4:	TI	10	B		25	3	3			ZNO
1994 06 22.17	Y	10.9	SC	25	T	4		& 1		?	150	ROQ
1994 06 24.85	M	9.4:	TI	10	B		25	3	4			ZNO
1994 06 26.19	Y	11.3	SC	25	T	4				&0.02	140	ROQ

Periodic Comet Kojima (1992z)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 01 08.79	C	18.4	GA	60.0	Y	6		0.2				NAK01
1994 02 03.63	C	17.6	GA	60.0	Y	6		0.25				NAK01
1994 02 10.35	I	[13.5:		41	L	4	183					HAL
1994 03 10.23	I	[13.7	WA	41	L	4	183	1				HAL
1994 03 10.64	C	18.0	GA	60.0	Y	6		0.3				NAK01
1994 03 17.58	C	17.9	GA	60.0	Y	6		0.25				NAK01
1994 04 13.50	C	18.5	GA	60.0	Y	6		0.25				NAK01
1994 05 05.16	c	21.6	FA	91.4	L	5						SCO01
1994 05 05.17	C	18.9	FA	91.4	L	5		0.25				SCO01
1994 05 06.51	C	18.8	GA	60.0	Y	6		0.3				NAK01
1994 06 14.18	C	19.7	FA	91.4	L	5						SCO01

Periodic Comet Borrelly (1987 XXXIII)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 11 15.91	S	7 :	AC	5.0	B		10	4.5	3			MIZ01
1987 12 10.74	S	7.5	AA	6	R	7	28		3			FOL
1987 12 10.90	S	7.5	AC	5.0	B		10	10	2			MIZ01
1987 12 11.77	S	7.3	AA	6	R	7	28		4			FOL
1987 12 12.88	S	7.8	AC	5.0	B		10	8	3			MIZ01
1987 12 13.87	S	8.0	AC	3.0	B		8	5.5	7			CSU
1987 12 19.83	S	7.5	AA	6	R	7	35		3			FOL
1987 12 21.77	S	7.7	AC	6	R	7	26	4.5	1			SZA03
1987 12 21.83	S	7.6	AA	6	R	7	35		3			FOL
1987 12 21.83	S	7.9	AC	3.0	B		8	5.5	7			CSU
1987 12 23.79	S	7.8	AC	5.0	B		10	5	3			MIZ01
1988 01 12.78	S	9.5	AC	15	L	11	56	1	1			SZA

Periodic Comet Kopff (1983 XIII)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1983 07 09.90	& S	11.5	AC	20.7	L	5	60	4	2			KES01

Periodic Comet Giacobini-Zinner (1985 XIII)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1985 07 26.99	S	10 :	AC	10.6	R	6	24	2	5	0.05	280	KES01
1985 08 20.07	S	9.0	AC	10.6	R	6	24	3.5	6	0.1	280	KES01

Periodic Comet Giacobini-Zinner (1985 XIII) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1985 09 13.07	S	9.2	AC	15	L	15	56	6	6	0.2	270	KES01

Periodic Comet Schwassmann-Wachmann 2

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 10 17.16	S	13.0	AC	25.4	J	6	115	1.0	0/			BOU
1993 11 17.04	S	12.4	AC	25.4	J	6	88	1.2	1/			BOU
1993 11 18.03	S	12.4	AC	25.4	J	6	88	1.3	1/			BOU
1993 12 17.02	S	11.9	AC	25.4	J	6	88	2.0	3			BOU
1994 01 06.02	S	11.7	AC	25.4	J	6	88	1.8	2/			BOU
1994 01 09.00	S	11.7	AC	25.4	J	6	58	1.8	4			BOU
1994 01 09.96	S	11.6	AC	25.4	J	6	72	2.0	2/			BOU
1994 01 13.99	M	11.6	AC	25.4	J	6	72	1.8	4			BOU
1994 01 15.01	B	11.6	VF	25	L	6	75	2.5	4/	?	320	REN
1994 01 16.01	S	11.6	AC	25.4	J	6	72	1.8	5			BOU
1994 02 02.15	M	11.1	CA	20	L	6	55					HAL
1994 02 02.97	M	11.2	AC	25.4	J	6	58	2.2	5			BOU
1994 02 04.98	B	11.6	VF	25	L	6	75	2.5	4/			REN
1994 02 05.06	B	11.4	VF	12	L	6	60	2.5	5			REN
1994 02 05.61	S	11.4	AC	20	L	6	50	3	4			KAM03
1994 02 07.53	M	10.7	AC	20	L	6	50	3	5			KAM03
1994 02 07.93	B	11.5	VF	12	L	6	60	2.5	5			REN
1994 02 08.94	S	11.2	AC	25.4	J	6	58	2.0	4/			BOU
1994 02 10.33	M	11.3	CA	41	L	4	83					HAL
1994 02 10.52	S	11.1	AC	20	L	6	50	3	4			KAM03
1994 02 11.96	S	11.3	AC	25.4	J	6	88	1.8	4			BOU
1994 02 12.89	B	11.6	VF	12	L	6	60	2	5			REN
1994 02 13.91	S	11.4	AC	25.4	J	6	58	1.8	4			BOU
1994 02 14.56	S	11.3	AC	20	L	6	50	3	4			KAM03
1994 02 15.94	B	11.7	VF	12	L	6	60	2	5			REN
1994 02 15.98	M	11.2	AC	25.4	J	6	58	2.0	4			BOU
1994 02 16.99	S	11.2	AC	25.4	J	6	58	2.0	4/			BOU
1994 02 18.03	S	11.4	AC	25.4	J	6	72	2.0	3/			BOU
1994 02 18.64	C	12.2	HS	20.0	L	6		0.6				ITO02
1994 02 19.08	S	11.5	AC	25.4	J	6	72	2.0	3/			BOU
1994 02 19.92	S	10.2	AC	44	L	5	100	2.3	4			SHA02
1994 02 28.81	B	11.8	VF	12	L	6	60	2	5			REN
1994 03 03.92	S	12.6	VB	30	R	18	95	1.4	3			SHA02
1994 03 04.81	S	11.2	HS	20.3	T	10	93	1.0	3			HAS02
1994 03 05.00	B	12.6	VF	25	L	6	75	1.5	4			REN
1994 03 06.48	C	13.8	HS	20.0	L	6		0.6				ITO02
1994 03 09.03	B	12.6	VF	25	L	6	75	1.75	4/			REN
1994 03 09.90	B	12.6	VF	12	L	6	60	2	4			REN
1994 03 10.21	M	11.9	CA	41	L	4	83					HAL
1994 03 10.85	S	11.5	AC	30.0	L	5	92	4	6			SCH04
1994 03 10.94	S	12.1	AC	25.4	J	6	88	1.5	3/			BOU
1994 03 11.92	S[	12.4	VB	33	L	5	90					SHA02
1994 03 12.82	S	12.2	AC	25.4	J	6	88	1.6	2/			BOU
1994 03 13.97	S	12.4	AC	25.4	J	6	88	1.5	2			BOU
1994 03 14.51	S	11.7	AC	20	L	6	50	2.5	3			KAM03
1994 03 15.96	S	12.5	AC	25.4	J	6	88	1.4	2			BOU
1994 03 16.92	S	12.3	AC	28.0	T	10	108	& 1	1			COM
1994 03 30.85	S	12.1	HS	44.5	L	4	100	0.7	2			HAS02
1994 04 01.24	S[	12.8	GA	35.9	L	7	164	! 0.5				MOD
1994 04 02.86	S	12.8	AC	25.4	J	6	115	1.0	2			BOU
1994 04 03.86	B	12.8	HS	25	L	15	139	2	6			STE10
1994 04 04.24	S[	13.3	GA	35.9	L	7	164	! 0.5				MOD
1994 04 05.16	S[	12.3	GA	35.9	L	7	164	! 0.5				MOD
1994 04 05.87	S	12.8	AC	25.4	J	6	88	1.3	1/			BOU

Periodic Comet Schwassmann-Wachmann 2 [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 06.25		S 12.2	CA	41	L	4	83					HAL
1994 04 06.91		S 12.6	AC	28.0	T	10	108	& 2	1			COM
1994 04 06.91		S 12.9	AC	25.4	J	6	115	1.0	1			BOU
1994 04 07.96		S 11.8	TI	25	L	6	60	1	2			KYS
1994 04 08.27		S[12.6	GA	35.9	L	7	164	! 0.5				MOD
1994 04 28.85		M 12.2	HS	13	L	8	69	0.6	1/			HOR02
1994 05 01.88		C 13.1	HS	50	Y	4		1.0		0.03	113	CAV
1994 05 02.17		S[14.1	GA	35.9	L	7	164	! 0.5				MOD
1994 05 02.53		C 13.6	HS	20.0	L	6		0.8				ITO02
1994 05 02.87		M 12.3	HS	10.0	B		25	0.8	6			ZNO
1994 05 02.90		S 13.1	AC	25.4	J	6	115		1			BOU
1994 05 03.15		S[14.2	GA	35.9	L	7	164	! 0.5				MOD
1994 05 03.89	!	V 13.4	YF	20.0	T	2		& 1.5	6	&0.05	110	MIK
1994 05 06.50		C 14.0	GA	60.0	Y	6		0.85		0.07	115	NAK01
1994 05 06.51		C 13.9	HS	20.0	L	6		0.8				ITO02
1994 05 07.84		S 12.9:	HS	25	L	6	60	0.7	1			KYS
1994 05 07.89		M 12.8	HS	25	L	12	80	1.2	6			ZNO
1994 05 08.87		S 13.4:	HS	25	L	6	150	0.5	1			KYS
1994 05 14.94		S 13.4	AC	20.3	T	10	167	0.3	2			GAR02
1994 05 27.86	!	V 13.9	AA	20.0	T	2		& 2.5	5	0.05	135	MIK
1994 06 01.48		C 14.3	GA	60.0	Y	6		0.95		0.04	115	NAK01

Periodic Comet Reinmuth 2 (1993g)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 09.44		I[12.5:		41	L	4	183					HAL

Periodic Comet Harrington (1994g)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 01.47		C 18.5	FA	91.4	L	5						SCO01
1994 05 02.45		C 18.6	FA	91.4	L	5						SCO01
1994 06 13.42		C 16.4	FA	91.4	L	5		0.17		&0.09	247	SCO01
1994 06 13.42		c 20.9	FA	91.4	L	5						SCO01

Periodic Comet Gunn (1989 XI)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 10 27.82		C 19.3	GA	60.0	Y	6		< 0.15	9			NAK01
1993 11 14.80		C 18.9	GA	60.0	Y	6						NAK01
1993 12 08.61		C 18.7	GA	60.0	Y	6		< 0.15	9			NAK01
1994 01 08.55		C 18.1	GA	60.0	Y	6		0.2				NAK01
1994 02 03.59		C 18.0	GA	60.0	Y	6		0.25			260	NAK01
1994 03 17.57		C 18.0	GA	60.0	Y	6		0.25				NAK01
1994 04 13.46		C 18.3	GA	60.0	Y	6		0.2				NAK01
1994 05 06.49		C 18.3	GA	60.0	Y	6		0.2				NAK01

Periodic Comet West-Kohoutek-Ikemura (1993o)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 11 17.02		S 12.8:	AC	25.4	J	6	115	1.5	1/			BOU
1993 11 18.01		S 12.8	AC	25.4	J	6	115	1.5	0/			BOU
1993 12 17.00		S 12.1	AC	25.4	J	6	58	2.8	0/			BOU
1993 12 20.00		S 12.1	AC	25.4	J	6	58	3.0	0			BOU
1994 01 06.00		S 12.5	AC	25.4	J	6	72	2.5	0			BOU
1994 01 08.47		C 15.2	HS	20.0	L	6		0.4				ITO02
1994 01 08.99		S 12.5	AC	25.4	J	6	72	2.5	0			BOU
1994 01 09.95		S 12.6	AC	25.4	J	6	72	2.5	0			BOU
1994 01 13.98		S 12.7	AC	25.4	J	6	72	2.5	0			BOU

Periodic Comet West-Kohoutek-Ikemura (1993o) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 01 15.51	C	15.8	HS	20.0	L	6		0.4				ITO02
1994 01 16.03	S	12.8	AC	25.4	J	6	72	2.2	0			BOU

Periodic Comet Wild 3 (1994b)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 01.39	C	18.4	FA	91.4	L	5		0.20		<0.01	273	SCO01
1994 05 01.39	c	20.7	FA	91.4	L	5						SCO01
1994 06 15.24	C	19.3	FA	91.4	L	5		0.32				SCO01
1994 06 15.24	c	22.1	FA	91.4	L	5						SCO01

Periodic Comet Bus (1993b)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 04.14	c	20.0	FA	91.4	L	5						SCO01
1994 05 04.16	C	17.0	FA	91.4	L	5		0.62		>0.01	115	SCO01
1994 06 14.20	c	21.8	FA	91.4	L	5						SCO01
1994 06 14.21	C	17.5	FA	91.4	L	5		0.28		<0.01	113	SCO01

Periodic Comet Kushida-Muramatsu (1993t)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 12 12.49	C	15.7	GA	60.0	Y	6		0.35			260	NAK01
1993 12 15.56	C	15.4	GA	60.0	Y	6		0.4			255	NAK01
1993 12 18.59	C	15.2	GA	60.0	Y	6		0.45			270	NAK01
1994 01 02.44	C	15.9	HS	20.0	L	6		0.4				ITO02
1994 01 04.57	C	15.6	GA	60.0	Y	6		0.5				NAK01
1994 01 09.52	C	15.7	GA	60.0	Y	6		0.5				NAK01
1994 02 03.53	C	16.2	GA	60.0	Y	6		0.35				NAK01
1994 03 02.51	C	17.1	HS	60.0	Y	6		0.25				NAK01
1994 03 17.49	C	16.9	GA	60.0	Y	6		0.2				NAK01
1994 03 30.47	C	17.2:	GA	60.0	Y	6		0.2				NAK01
1994 04 03.47	C	17.3	GA	60.0	Y	6		0.2				NAK01
1994 04 08.45	C	17.4	GA	60.0	Y	6		0.3				NAK01
1994 05 03.14	C	17.6	FA	91.4	L	5		0.28		<0.01	284	SCO01
1994 05 03.16	c	21.2	FA	91.4	L	5						SCO01
1994 05 06.48	C	18.0:	GA	60.0	Y	6		0.2				NAK01

Periodic Comet Faye (1991 XXI)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1991 11 09.65	B	9.4	S	7.0	B		10					OHK
1991 11 11.52	B	9.3	S	7.0	B		10					OHK

Periodic Comet Brooks 2 (1994j)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 16.44	c	21.8	FA	91.4	L	5						SCO01
1994 06 16.45	C	17.5	FA	91.4	L	5		0.30		0.03	246	SCO01

Periodic Comet Whipple (1993n)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 13.44	C	19.4	FA	91.4	L	5		0.13		<0.01	252	SCO01
1994 06 13.45	c	21.5	FA	91.4	L	5						SCO01

Periodic Comet Russell 2 (1994e)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 02.40		c 20.6	FA	91.4	L	5						SCO01
1994 05 02.41		C 19.3	FA	91.4	L	5		0.17				SCO01
1994 06 12.22		C 18.4	FA	91.4	L	5		0.28		<0.01	0	SCO01
1994 06 12.23		c 20.7	FA	91.4	L	5						SCO01

Periodic Comet Kushida (1994a)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 01 09.57	a	C 11.9	GA	60.0	Y	6		2.6				NAK01
1994 01 14.00		S 10.5	AC	25.4	J	6	58	3.2	1/			BOU
1994 01 15.72		C 13.2	HS	20.0	L	6		0.6				ITO02
1994 01 15.80		C 11.2	GA	60.0	Y	6		4.2				NAK01
1994 01 16.02		S 10.4	GA	25.4	J	6	58	3.5	2			BOU
1994 02 02.17		S 10.3	AC	20	L	6	55	5				HAL
1994 02 02.98		M 10.3	GA	25.4	J	6	47	3.5	2/			BOU
1994 02 03.64		C 11.1	GA	60.0	Y	6		3.9				NAK01
1994 02 05.00		B 12 :	VF	25	L	6	75	2.5	3/			REN
1994 02 05.07		B 11.3	VF	12	L	6	40	3	3			REN
1994 02 05.65		S 10.5	AC	20	L	6	50	4	4			KAM03
1994 02 07.55		M 10.3	AC	20	L	6	50	4	4			KAM03
1994 02 08.01		B 11.3	VF	12	L	6	40	3	3			REN
1994 02 08.02		S 11.6	VB	30	R	18	90	2.6	2			SHA02
1994 02 08.95		S 10.4	GA	25.4	J	6	47	3.2	2			BOU
1994 02 10.38		M 10.3	AC	41	L	4	83					HAL
1994 02 10.55		S 10.7	AC	20	L	6	50	4	3			KAM03
1994 02 12.97		B 11.5	VF	12	L	6	40	3	3			REN
1994 02 13.92		S 10.8	GA	25.4	J	6	58	3.4	1			BOU
1994 02 14.57		S 10.4	AC	20	L	6	50	5	4			KAM03
1994 02 15.95		B 11.5	VF	12	L	6	40	3	3			REN
1994 02 15.96		S 10.7	GA	25.4	J	6	47	3.5	1/			BOU
1994 02 17.01		S 10.7	GA	25.4	J	6	47	3.5	1/			BOU
1994 02 18.04		S 10.6	GA	25.4	J	6	47	3.7	1			BOU
1994 02 18.69		C 13.3	HS	20.0	L	6		0.6				ITO02
1994 02 19.08		S 10.8	GA	25.4	J	6	58	3.2	1/			BOU
1994 03 02.58		C 10.9	HS	60.0	Y	6		4.2				NAK01
1994 03 04.90		B 12.3	VF	25	L	6	75	2.25	3			REN
1994 03 06.02		S 11.5	GA	25.4	J	6	72	3.0	0/			BOU
1994 03 06.19		S 10.3	AC	20	L	6	55	7				HAL
1994 03 06.42		C 14.2	HS	20.0	L	6		0.4				ITO02
1994 03 09.05		B 13.0	VF	25	L	6	75	2.5	3			REN
1994 03 10.26		S 10.5	AC	41	L	4	83					HAL
1994 03 10.65		C 11.7	GA	60.0	Y	6		4.5				NAK01
1994 03 10.93		S 11.5	GA	25.4	J	6	72	2.5	1			BOU
1994 03 13.99		S 11.8	GA	25.4	J	6	88	2.7	0/			BOU
1994 03 14.53		S 12.1	AC	20	L	6	50	2.5	2			KAM03
1994 03 15.96		S 12.1	GA	25.4	J	6	88	2.5	0			BOU
1994 03 17.59		C 12.1	GA	60.0	Y	6		3.5				NAK01
1994 04 02.55		C 13.6	HS	20.0	L	6		0.58				ITO02
1994 04 02.87		S[13.0	GA	25.4	J	6	115	! 1.0				BOU
1994 04 04.27		S[12.7	GA	35.9	L	7	85	! 1.0				MOD
1994 04 05.14		S[12.8	GA	35.9	L	7	85	! 1.0				MOD
1994 04 08.24		S[12.6	GA	35.9	L	7	85	! 1.0				MOD
1994 04 08.51		C 13.9	GA	60.0	Y	6		1.9				NAK01
1994 05 04.14		c 20.7	FA	91.4	L	5						SCO01
1994 05 04.15		C 16.6	FA	91.4	L	5		2.23				SCO01
1994 05 06.52		C 15.7	GA	60.0	Y	6		0.85				NAK01
1994 05 06.55		C 15.8	HS	20.0	L	6		0.6				ITO02
1994 05 12.49		C 15.6	GA	60.0	Y	6		0.95				NAK01
1994 06 01.49		C 17.2	GA	60.0	Y	6		0.45				NAK01

Periodic Comet Kushida (1994a) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 06 13.19	c	21.6	FA	91.4	L	5						SCO01
1994 06 13.20	C	18.6	FA	91.4	L	5		1.16		&0.04	291	SCO01

Periodic Comet Schaumasse (1992x)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 01 25.96	S	10.5	AA	20	R	14	40	5	2			LAN03
1993 02 05.88	S	10.3	AA	30	R	18	95					LAN03
1993 03 15.83	S	10.5	AA	20	R	14	40	3	2			LAN03
1993 04 21.93	S	10.4	AA	20	R	14	40	1.2	1			SHA02

Periodic Comet Gehrels 3 (1992v)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 02.19	C	19.3	FA	91.4	L	5		0.18				SCO01
1994 05 02.20	c	21.5	FA	91.4	L	5						SCO01
1994 06 12.19	c	22.5	FA	91.4	L	5						SCO01
1994 06 12.20	C	20.2	FA	91.4	L	5		0.22				SCO01

Periodic Comet Maury (1994h)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 03.46	C	17.9	FA	91.4	L	5						SCO01
1994 05 04.46	C	17.7	FA	91.4	L	5						SCO01
1994 06 12.43	c	20.9	FA	91.4	L	5						SCO01
1994 06 12.44	C	17.9	FA	91.4	L	5		0.35		0.02	253	SCO01

Periodic Comet Tuttle (1992r)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 06.12	I	[12.5:		41	L	4	183					HAL
1994 04 08.05	w	S[12.0	GA	35.9	L	7	164	! 0.5				MOD
1994 04 18.07	a	S[10.5	GA	20.0	L	5	68	! 1.0				MOD
1994 05 03.08	&	S[11.1	GA	35.9	L	7	164	! 0.5				MOD

Periodic Comet Swift-Tuttle (1992 XXVIII = 1992t)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1992 11 01.39	B	6.1	S	10.0	B		20		4	0.75		OHK
1992 11 30.65	B	4.5	HD	5	R		20	4.5	7	0.5		NES
1992 12 01.62	B	4.5	HD	5	R		20	3.5	7	0.5		NES
1992 12 03.63	B	4.7	HD	5	R		20	3.5	7	0.5		NES
1992 12 03.65	B	4.7	HD	11.0	B		20	2	8	0.2		NES
1992 12 07.61	B	4.4	HD	5	R		20	3	7			NES
1992 12 07.64	B	4.4	HD	11.0	B		20	2	8			NES
1992 12 08.61	B	4.3:	HD	5	R		20	3.5	7			NES

Periodic Comet Brorsen-Metcalf (1989 X)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1989 07 29.00	S	8.5	AC	6.0	B		20	5				MIZ01
1989 08 02.99	S	7.6	AA	20	L		20	6	5			SZA
1989 08 06.05	S	7.5	AA	20	L		20		4			SZA
1989 08 06.05	S	7.6	AC	15	L	9	50	6.5	2/			JON04
1989 08 08.08	S	7.5	AC	15	L	9	50	7	3			JON04
1989 08 11.02	S	6.2:	AC	8.3	R	8	15	7	7/	0.6	310	VIC
1989 08 12.03	S	6.1	AC	8.3	R	8	15	7	7	0.6	320	VIC
1989 08 14.01	B	6.8	AC	15.6	L	10	54	2	5	0.04	305	KOS
1989 08 14.05	S	6.7	AC	5	R	11	22	5.5	2/			KOC03

Periodic Comet Brorsen-Metcalf (1989 X) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1989 08 14.06	S	7.3	AC	5.0	B		10	10				MIZ01
1989 08 14.08	S	7.1	AC	15	L	9	50	8	4			JON04
1989 08 15.05	B	6.2	AC	15.6	L	10	54	3	6	0.04	265	KOS
1989 08 15.06	S	6.5	AC	5	R	11	22	8	4/			KOC03
1989 08 16.05	B	6.0	AC	15.6	L	10	54	3	7	0.04	260	KOS
1989 08 16.06	S	6.9	AC	15	L	9	50		4			JON04
1989 08 22.08	& B	6.7	AC	15.6	L	10	54	2	7	0.15	270	KOS
1989 09 02.08	& S	6.3	AC	6.0	B		20	9	7/			SAR02
1989 09 02.10	& S	5.9	AC	8	R	6	25	3.5	8/	0.5	310	KOC03
1989 09 06.10	& S	6.2	AC	8	R	6	25	3	8	0.8	325	KOC03
1989 09 09.13	& S	5.8	AC	15	L	9	50		8			JON04

Periodic Comet Schwassmann-Wachmann 1 (1989 XV)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 01 08.63	C	13.4	HS	60.0	Y	6		0.6				ITO02
1994 02 10.31	I[	13.5:		41	L	4	183					HAL
1994 02 13.83	X	13.4	GA	20	L	4		0.4	3			MIL02
1994 02 16.88	X	13.0	GA	20	L	4		0.5	2			MIL02
1994 02 17.00	S	13.7	AC	25.4	J	6	143	0.7	1			BOU
1994 03 06.22	I[	12.5:		20	L	6	110					HAL
1994 03 10.19	S	13.4	WA	41	L	4	183					HAL
1994 03 12.15	S[	14.3	AC	35.9	L	7	164	! 0.5				MOD
1994 04 01.23	S[	13.3	AC	35.9	L	7	164	! 0.5				MOD
1994 04 04.21	S[	13.4	AC	35.9	L	7	164	! 0.5				MOD
1994 04 05.12	S[	14.1	AC	35.9	L	7	164	! 0.5				MOD
1994 04 06.18	I[	13.5:		41	L	4	183					HAL
1994 04 08.20	S[	13.8	AC	35.9	L	7	164	! 0.5				MOD
1994 04 18.17	S[	12.5	AC	35.9	L	7	164	! 0.5				MOD
1994 05 01.83	S	12.8	AC	33.4	L	4	214	0.75	1			SZE02
1994 05 01.85	C	12.2	HS	50	Y	4		0.7				CAV
1994 05 02.13	S	13.7	AC	35.9	L	7	164	0.40	1			MOD
1994 05 02.50	C	12.6	HS	20.0	L	6		0.8				ITO02
1994 05 02.83	S	13.1	AC	33.4	L	4	214	0.5	2			SZE02
1994 05 03.12	M	13.7	AC	35.9	L	7	164	0.50	2			MOD
1994 05 03.83	! V	12.7	YF	20.0	T	2		0.5	8			MIK
1994 05 04.86	S	13.2	AC	33.4	L	4	214	0.6	0			SZE02
1994 05 06.48	C	12.8	GA	60.0	Y	6		1.8	7/			NAK01
1994 05 06.50	C	12.6	HS	20.0	L	6		0.8				ITO02
1994 05 07.10	M	14.1	AC	35.9	L	7	164	0.35	3			MOD
1994 05 07.86	S	13.2	AC	33.4	L	4	214	0.4	1			SZE02
1994 05 09.10	S[	13.5	AC	35.9	L	7	164	! 0.5				MOD
1994 05 09.85	! V	12.7	YF	20.0	T	2		& 1.5	6			MIK
1994 05 11.13	S[	13.3	AC	35.9	L	7	164	! 0.5				MOD
1994 05 12.47	C	12.8	GA	60.0	Y	6		2.0	7			NAK01
1994 05 13.11	S[	13.5	AC	35.9	L	7	164	! 0.5				MOD
1994 05 29.12	S[	12.0	AC	35.9	L	7	164	! 0.5				MOD

Periodic Comet Shoemaker-Levy 9 (1993e)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 01 08.85	C	15.2:	GA	60.0	Y	6		2.8				NAK01
1994 01 15.84	C	15.4:	GA	60.0	Y	6		2.7				NAK01
1994 02 10.47	I[	13.5:		41	L	4	183					HAL
1994 02 18.47	S[	12.6	GA	35.9	L	7	164	! 1.5				MOD
1994 03 15.73	C	15.3:	GA	60.0	Y	6		2.8				NAK01
1994 03 22.41	S[	12.3	GA	35.9	L	7	164	! 1.5				MOD
1994 04 08.39	S[	12.4	GA	40	L	7	190	! 1.5				MOD
1994 04 13.73	C	15.2:	GA	60.0	Y	6		5.2				NAK01

Periodic Comet Shoemaker-Levy 9 (1993e) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 17.27	S	[12.9	GA	45.7	L	4	135	! 1.5				MOD
1994 05 08.65	C	14.9:	GA	60.0	Y	6		5.2				NAK01
1994 05 14.96	S	[13.5	AC	20.3	T	10	167	! 0.5				GAR02
1994 05 16.65	C	15.1:	GA	60.0	Y	6		5.4				NAK01
1994 05 17.34	I	[13.5:		41	L	4	183					HAL
1994 06 01.55	C	15.0:	GA	60.0	Y	6		6.8				NAK01
1994 06 06.98	S	[13.3	AC	20.3	T	10	167	! 0.5				GAR02
1994 06 09.20	I	[13.5:		41	L	4	183					HAL

Periodic Comet Shoemaker 4 (1994k)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 22.76	C	16.6	GA	60.0	Y	6		0.3				NAK01
1994 06 01.61	C	16.1	GA	60.0	Y	6		0.5				NAK01
1994 06 02.55	C	16.3	GA	20.0	L	6		0.6				ITO02
1994 06 02.66	C	16.0	GA	60.0	Y	6		0.55				NAK01
1994 06 03.59	C	16.1	GA	60.0	Y	6		0.55				NAK01
1994 06 16.22	c	19.5	FA	91.4	L	5						SCO01
1994 06 16.23	C	16.6	FA	91.4	L	5		0.65		&0.01	298	SCO01

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The Last 20 Comets to Receive Provisional Letter Designations

Listed below, for handy reference, are the last 20 comets which have been given letter designations (1989a is the first comet to be discovered/recovered in 1989, 1989b is the second comet..., etc.). After the "equal sign" is given the name, preceded by a star (⋆) if the comet is a new discovery (compared to a recovery from predictions of a previously-known short-period comet); a 'sharp' sign (#) is used to indicate a 're-discovery' of a comet that had been lost for many years (or one significantly off from the prediction). 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 second-to-last column indicate the *IAU Circular* containing the discovery/recovery announcement. The last column lists the 3-digit code for short-period comets as used internally in archival data (first 3 characters), and which should be used by those observers contributing data in computer-readable form. [This list updates that in the April 1994 issue, p. 78.]

Desig.			*Comet*	*P*	*T*	*q*	*IAUC*	P/ code
1993q	=		P/Urata-Niijima	6.6	7/13/93	1.46	5882	639
1993r	=	#	P/Spitaler	7.1	1/28/94	2.1	5885	605
1993s	=	⋆	P/Mueller 5	13.8	9/10/94	4.3	5891	955
1993t	=	⋆	P/Kushida-Muramatsu	7.4	12/7/93	2.7	5903	649
1993u	=		P/Wiseman-Skiff	6.5	6/4/93	1.5	5908	641
1993v	=	⋆	McNaught-Russell		3/31/94	0.87	5910	
1994a	=	⋆	P/Kushida	7.3	12/12/93	1.4	5918	731
1994b	=		P/Wild 3	6.9	7/21/94	2.3	5933	632
1994c	=	⋆	Mueller		12/16/93	1.9	5948	
1994d	=	⋆	Shoemaker-Levy		5/27/94	1.16	5962	
1994e	=		P/Russell 2	7.4	10/27/94	2.3	5967	719
1994f	=	⋆	Takamizawa-Levy		5/23/94	1.35	5974	
1994g	=		P/Harrington	6.8	8/23/94	1.57	5982	623
1994h	=		P/Maury	8.7	3/18/94	2.0	5984	810
1994i	=	⋆	Takamizawa		6/28/94	1.95	5986	
1994j	=		P/Brooks 2	6.9	9/1/94	1.8	5988	702
1994k	=	⋆	P/Shoemaker 4	15.4	10/31/94	2.9	5991	956
1994l	=		P/Borrelly	6.9	11/1/94	1.4	6009	610
1994m	=	⋆	Nakamura-Nishimura-Machholz		7/10/94	1.2	6013	
1994n	=	⋆	McNaught-Hartley		1/6/95	1.9	6014	

Recent News and Research Concerning Comets

This is really an interesting time regarding minor bodies of the solar system. Several additional trans-Neptunian objects (most probably on the order of 200 km in size) have been found in the past six months, so that the total of such known objects has now surpassed one dozen. And as I write this, we are halfway through the week-long bombardment of Jupiter by the remains of periodic comet Shoemaker-Levy 9 (1993*e*). The plumes visible above Jupiter's limb, shortly after each nucleus impacts the planet's atmosphere, are truly amazing, and planetary astronomer Clark Chapman has described the visual feature of the impact site from nucleus 'G' (as seen with his backyard telescope) as "the most prominent discrete spot ever observed on Jupiter". It will be interesting to see what can be postulated about the physical nature of the actual nuclei of comet 1993*e* from these impacts.

Since I wrote this column in the January issue, there have been seven new comet discoveries and six recoveries of previously-discovered short-period comets from predictions. Numerous comets have been bright enough to be followed extensively by visual observers in recent months, the brightest being comet McNaught-Russell 1993*v*, which reached total visual mag 6.5 in early April and was circumpolar for most northern-hemisphere observers. Comet Mueller 1993*p* is evidently fading into oblivion, its nucleus disappearing in recent weeks (see the "Descriptive Information" supplement the tabulated data earlier in this issue), but it was also visible in binoculars as an 8th-magnitude object in April. P/Encke was, of course, a seventh-magnitude binocular object in late January, and P/Tempel 1 reached ninth magnitude in May. Two newly-discovered comets (1994*f*, 1994*i*) brought to six the number of binocular comets visible in the past six months.

P/Schwassmann-Wachmann 1 experienced a well-observed outburst in May. M. C. Senay and David Jewitt of the University of Hawii, meanwhile, reported that radio observations from October and November 1993 yielded a definite detection of CO at 230 GHz; their estimate of the CO gas-production rate is, in their words, "sufficient to drive the dust activity observed in this comet"; they add that this "provides the first direct evidence that activity in comets beyond the orbit of Jupiter can be powered by CO" (*IAUC* 5929).

Jim Scotti has recovered four comets since February with the Spacewatch 90-cm telescope at Kitt Peak: P/Wild 3 (1994*b*) on images taken Feb. 10 and 13; P/Russell 2 (1994*e*) on April 5 and 6; P/Harrington (1994*g*) on May 1 and 2; and P/Maury (1994*h*) on May 3 and 4. P/Maury required a correction of half a day to the time of perihelion, this being its first recovery following its discovery apparition. Akimasa Nakamura (*ICQ* Observation Coordinator for Japan) and T. Seki independently recovered P/Brooks 2 (1994*j*) on May 8 and 12. Alan Gilmore and Pam Kilmartin at Mount John (New Zealand) and Gordon Garradd at Siding Spring (Australia) independently recovered P/Borrelly (1994*l*) in mid-June.

Jean Mueller found yet another comet (her tenth) on plates taken on March 10 with the 48-inch Schmidt telescope in the course of the second Palomar Sky Survey; comet Mueller 1994*c* was then diffuse and near mag 17. The successful observing team of Gene and Carolyn Shoemaker and David Levy found their thirteenth team-named comet on films exposed March 14 with the 18-inch Schmidt telescope at Palomar; comet Shoemaker-Levy 1994*d* was then quite bright — near mag 13. Carolyn Shoemaker also found her 32nd named comet — 1994*k* — on films taken by Tim Spahr, Shoemaker and Levy, on May 14; the find was not made until Shoemaker had returned to Flagstaff, Arizona, after the observing run, and confirmation was obtained by T. Kojima and S. Nakano in Japan on May 20, the CCD images then indicating $m_1 = 17.5$. Astrometric observations soon showed that comet 1994*k* is of short-period, and it received the name P/Shoemaker 4.

Kesao Takamizawa of Saku-cho, Minami-Saku-gun, Nagano-ken, Japan, found two comets photographically within one month, using his 10-cm *f*/4 patrol camera: comet 1994*f* was found on a photograph taken April 14.756 UT, and comet 1994*i* was found on exposures taken on May 6 and 7. David H. Levy of Tucson, Arizona, independently found comet 1994*f* visually on April 15.4 (his eighth such discovery), and the comet was named Takamizawa-Levy. Both comets were quite well observed in the following weeks.

Don Machholz of Colfax, California, found his seventh comet visually on July 6.408 with his 27×120 binoculars, nearly a day after Masamitsu Nakamura (Hamamatsu, Shizuoka-ken, Japan) and Hideo Nishimura (Kakegawa, Shizuoka-ken, Japan) had independently found comet 1994*m*. Both of the Japanese observers used 25×150 binoculars for their finds. Comet Nakamura-Nishimura-Machholz was moving westward in Camelopardalis (near $\delta = +70°$) when discovered, near ninth magnitude.

Robert Houston McNaught found a comet on a 110-minute U.K. Schmidt (48-inch) Telescope exposure taken by Malcolm Hartley on July 6, the sixteenth-magnitude comet showing a 15″ coma of mag 16, a very strong condensation, and a westward tail. Comet McNaught-Hartley 1994*n* was then moving slowly northwestward in the southern constellation Grus, and this was McNaught's ninth photographic comet discovery. — D. W. E. Green [1994 July 19]

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