

# GENERAL REPORT OF POSITION OBSERVATIONS BY THE ALPO MINOR PLANETS SECTION FOR THE YEAR 2020

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Observations of positions of minor planets by members of the Minor Planets Section in calendar year 2020 are summarized.

During the year 2020 a total of 1486 observations of 419 different minor planets were reported by members of the Minor Planets Section. Of these, 1458 are approximate visual positions denoted V, and 28 are digital camera images denoted C not measured at the time of writing.

The summary lists minor planets in numerical order, the observer and telescope aperture (in cm), UT dates of the observations, and the total number of observations in that interval. When a significant departure from the predicted magnitude was noted, it is stated in the next line below the number of positions. The year is 2020 in each case.

Positional observations were contributed by the following observers:

| Observer, Instrument                                                                                        | Location                                                                                             | Planets | Positions |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------|-----------|
| Faure, Gerard<br>20 cm Celestron<br>35 cm Meade LX200<br>45 cm Dobson                                       | Col d'Arlezier,<br>Vaison la romaine, France<br>Col de L'Arzelier, France<br>Pas du Serpaton, France | 29      | 72V       |
| Harvey, G. Roger<br>81 cm Newtonian,                                                                        | Concord, North<br>Carolina, USA                                                                      | 347     | 1181V     |
| Pryal, Jim<br>20 cm f/10 SCT                                                                                | Ellensburg, WA USA                                                                                   | 5       | 14V       |
| Rayon, Jean-Michel<br>15 cm Celestron 6<br>25 cm Quattro<br>45 cm Stargate<br>APN Sony A6000 series cameras | Meylan, France                                                                                       | 16      | 28C       |
| Werner, Robert<br>20 cm Celestron                                                                           | Pasadena, CA USA                                                                                     | 39      | 191V      |

CCD observations are labeled C; all others are visual)

| MINOR PLANET | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. |
|--------------|-----------------------------|----------------------------|-------------|
| 6 Hebe       | Werner, 20                  | Apr 16-May 23              | 12          |
| 8 Flora      | Werner, 20                  | Nov 15-Dec 16              | 8           |
| 16 Psyche    | Werner, 20                  | Dec 5-16                   | 2           |
| 20 Massalia  | Werner, 20                  | Oct 13-21                  | 7           |
| 23 Thalia    | Pryal, 20                   | Apr 22                     | 2           |
|              | Werner, 20                  | May 15-Jun 9               | 11          |
| 25 Phocaea   | Werner, 20                  | Apr 16-23                  | 3           |
| 27 Euterpe   | Werner, 20                  | Apr 15-29                  | 7           |
| 30 Urania    | Werner, 20                  | Apr 15-22                  | 3           |
| 32 Pomona    | Werner, 20                  | Oct 13-15                  | 2           |
| 40 Harmonia  | Pryal, 20                   | Apr 22                     | 2           |
|              | Werner, 20                  | May 15-Jun 17              | 12          |
| 42 Isis      | Werner, 20                  | May 27-Jul 20              | 7           |
| 44 Nysa      | Werner, 20                  | Oct 13-15                  | 2           |
| 49 Pales     | Werner, 20                  | Oct 13-17                  | 4           |
| 56 Melete    | Werner, 20                  | Jul 19-20                  | 2           |
| 65 Cybele    | Pryal, 20                   | Apr 22                     | 2           |
|              | Werner, 20                  | Apr 16-May 28              | 12          |

| MINOR PLANET      | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. |
|-------------------|-----------------------------|----------------------------|-------------|
| 67 Asia           | Werner, 20                  | Nov 15-19                  | 4           |
| 68 Leto           | Werner, 20                  | Oct 17-21                  | 3           |
| 71 Niobe          | Werner, 20                  | Apr 16-28                  | 5           |
| 74 Galatea        | Werner, 20                  | Dec 5-16                   | 3           |
| 82 Alkmene        | Werner, 20                  | Nov 16-19                  | 3           |
| 85 Io             | Werner, 20                  | Jun 9-20                   | 3           |
| 102 Miriam        | Werner, 20                  | Oct 13-17                  | 4           |
| 177 Irma          | Werner, 20                  | Nov 16-17                  | 2           |
| 185 Eunike        | Werner, 20                  | Jul 19-29                  | 2           |
| 194 Prokne        | Werner, 20                  | Nov 15-Dec 5               | 5           |
| 200 Dynamene      | Werner, 20                  | Nov 15-19                  | 4           |
| 202 Chryseis      | Werner, 20                  | Dec 6-7                    | 2           |
| 250 Bettina       | Werner, 20                  | Dec 5-6                    | 2           |
| 252 Clementina    | Harvey, 81                  | Nov 20                     | 3           |
| 266 Aline         | Faure, 20                   | Nov 19                     | 2           |
|                   | Werner, 20                  | Nov 16-17                  | 2           |
| 270 Anahita       | Werner, 20                  | May 20-Jun 9               | 4           |
| 349 Dembowska     | Werner, 20                  | May 20-29                  | 7           |
| 354 Eleonora      | Pryal, 20                   | Apr 22                     | 2           |
| 375 Ursula        | Werner, 20                  | Oct 13-15                  | 2           |
| 386 Siegena       | Werner, 20                  | Dec 5-16                   | 4           |
| 404 Arsinoe       | Werner, 20                  | May 15-29                  | 7           |
| 451 Patientia     | Werner, 20                  | May 27-Jun 9               | 3           |
| 516 Amherstia     | Werner, 20                  | Apr 15-29                  | 5           |
| 737 Arequipa      | Werner, 20                  | Oct 13-15                  | 3           |
| 747 Winchester    | Werner, 20                  | Nov 15-Dec 16              | 8           |
| 1012 Sarema       | Faure, 35                   | Sep 16                     | 2           |
| 1024 Hale         | Faure, 20                   | Oct 17                     | 4           |
| 1081 Reseda       | Faure, 20                   | Nov 19                     | 2           |
|                   | Rayon, 45                   | Nov 18                     | 2C          |
| 1092 Lilium       | Faure, 35                   | Sep 21                     | 2           |
| 1205 Ebellia      | Harvey, 81                  | Nov 8-16                   | 12          |
| 1313 Berna        | Rayon, 45                   | Nov 18                     | 2C          |
| 1380 Volodia      | Harvey, 81                  | Apr 17                     | 6           |
| 1538 Detre        | Harvey, 81                  | Oct 7                      | 3           |
| 1564 Sribja       | Faure, 20                   | Oct 17-18                  | 2           |
| 1652 Herge        | Faure, 20                   | Apr 14                     | 3           |
| 1873 Agenor       | Rayon, 25                   | May 26                     | 1C          |
| 1877 Marsden      | Faure, 45                   | Aug 22                     | 2           |
|                   | Harvey, 81                  | Aug 9                      | 3           |
| 1900 Katyusha     | Faure, 20                   | Oct 18                     | 2           |
| 1966 Tristan      | Harvey, 81                  | Apr 17                     | 4           |
|                   |                             | 0.4b@16.3                  |             |
| 2074 Shoemaker    | Faure, 20                   | Nov 18                     | 4           |
|                   | Rayon, 25, 45               | Nov 14-18                  | 3C          |
| 2171 Kiev         | Faure, 35                   | May 26-27                  | 2           |
| 2189 Zaragoza     | Harvey, 81                  | Oct 14                     | 3           |
| 2215 Sichuan      | Faure, 20                   | Nov 19                     | 2           |
|                   | Rayon, 45                   | Nov 18                     | 2C          |
| 2223 Sarpedon     | Faure, 35                   | May 26-27                  | 4           |
| 2317 Galya        | Harvey, 81                  | Sep 11                     | 3           |
| 2327 Gershberg    | Harvey, 81                  | Oct 14                     | 3           |
| 2363 Cebriones    | Faure, 35                   | May 25                     | 2           |
|                   | Rayon, 25                   | May 26                     | 1C          |
| 2456 Palamedes    | Faure, 35                   | Sep 15                     | 2           |
| 2518 Rutllant     | Harvey, 81                  | Jun 14                     | 6           |
| 2520 Novorossiysk | Harvey, 81                  | Sep 21                     | 3           |
| 2614 Torrence     | Harvey, 81                  | Oct 14                     | 3           |
| 2674 Pandarus     | Faure, 35                   | Jun 22                     | 3           |
| 2821 Slavka       | Harvey, 81                  | Oct 15                     | 3           |
| 2823 van der Laan | Harvey, 81                  | Oct 18                     | 3           |
| 2893 Peiroos      | Faure, 35                   | May 25                     | 2           |
|                   | Rayon, 25                   | May 26                     | 1C          |
| 2922 Dikan'ka     | Harvey, 81                  | May 12                     | 3           |
| 2935 Naerum       | Harvey, 81                  | Jun 21                     | 3           |
| 2960 Ohtaki       | Harvey, 81                  | Jan 22                     | 3           |
| 2993 Wendy        | Faure, 35                   | Jul 21                     | 2           |
| 2998 Berendeya    | Harvey, 81                  | Aug 9-11                   | 3           |
| 3002 Delasalle    | Faure, 35                   | Sep 16                     | 2           |

| MINOR PLANET        | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. | MINOR PLANET          | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. |
|---------------------|-----------------------------|----------------------------|-------------|-----------------------|-----------------------------|----------------------------|-------------|
| 3030 Vehrenberg     | Faure, 45                   | Aug 20-21                  | 3           | 5656 Oldfield         | Harvey, 81                  | Jul 27                     | 3           |
|                     | Harvey, 81                  | Aug 19                     | 3           | 5672 Libby            | Harvey, 81                  | Apr 21                     | 3           |
|                     | Rayon, 45                   | Aug 27                     | 2C          | 5690 1992 EU          | Harvey, 81                  | Feb 23                     | 3           |
| 3088 Jinxiuzhonghua | Harvey, 81                  | Feb 15                     | 3           | 5742 1990 TN4         | Harvey, 81                  | Feb 28                     | 3           |
|                     |                             | 0.5f@16.1                  |             | 5753 Yoshidatadahiko  | Harvey, 81                  | Aug 19                     | 3           |
| 3096 Bezruc         | Harvey, 81                  | Jul 14                     | 3           | 5765 Izett            | Harvey, 81                  | Feb 15                     | 3           |
| 3145 Walter Adams   | Harvey, 81                  | Oct 19                     | 3           | 5767 Moldun           | Harvey, 81                  | Jul 27                     | 3           |
| 3151 Talbot         | Faure, 35                   | May 27                     | 2           | 5805 Glasgow          | Harvey, 81                  | Feb 22                     | 3           |
| 3187 Dalian         | Harvey, 81                  | Jan 28                     | 3           | 5862 Sakanoue         | Harvey, 81                  | Feb 28                     | 3           |
| 3321 Dasha          | Harvey, 81                  | Nov 19                     | 3           | 5893 Coltrane         | Harvey, 81                  | Apr 4                      | 3           |
| 3323 Turgenev       | Harvey, 81                  | Oct 15                     | 3           | 5895 Zbirka           | Harvey, 81                  | Oct 18                     | 3           |
|                     |                             | 0.5f@16.2                  |             | 5912 Oyakoshiyuki     | Harvey, 81                  | Jan 28                     | 3           |
| 3349 Manas          | Harvey, 81                  | Apr 17                     | 3           | 5921 1992 UL          | Harvey, 81                  | Feb 28                     | 3           |
| 3464 Owensby        | Harvey, 81                  | Jan 28                     | 3           | 5933 Kemurdzhian      | Harvey, 81                  | Jun 1                      | 3           |
| 3522 Becker         | Harvey, 81                  | Aug 19                     | 3           | 5978 Kaminokuni       | Harvey, 81                  | Jan 1                      | 3           |
| 3558 Shishkin       | Harvey, 81                  | Sep 14                     | 3           | 5996 Julioangel       | Harvey, 81                  | Sep 7                      | 3           |
|                     |                             | 0.5f@16.2                  |             | 6004 1988 XY1         | Harvey, 81                  | Jan 1                      | 3           |
| 3572 Leogoldberg    | Harvey, 81                  | Aug 9                      | 3           | 6005 1989 BD          | Harvey, 81                  | Jan 23                     | 3           |
| 3595 Gallagher      | Harvey, 81                  | Nov 16                     | 3           | 6049 Toda             | Harvey, 81                  | Jul 28                     | 3           |
| 3596 Meriones       | Harvey, 81                  | Oct 7                      | 3           | 6089 Izumi            | Harvey, 81                  | Nov 16                     | 3           |
| 3608 Kataev         | Harvey, 81                  | May 11                     | 3           | 6166 Univsima         | Harvey, 81                  | Dec 11                     | 3           |
| 3612 Peale          | Harvey, 81                  | Sep 14                     | 3           | 6207 Bourvil          | Harvey, 81                  | Jan 29                     | 3           |
| 3637 O'Meara        | Faure, 35                   | Jun 23                     | 2           | 6222 1980 PB3         | Harvey, 81                  | May 12                     | 3           |
| 3705 Hotellasilla   | Harvey, 81                  | Oct 15                     | 3           | 6231 Hundertwasser    | Harvey, 81                  | Feb 28                     | 3           |
| 3714 Kenrussell     | Harvey, 81                  | Oct 14                     | 3           | 6251 Setsuko          | Harvey, 81                  | Apr 17                     | 3           |
| 3781 Dufek          | Harvey, 81                  | Oct 19                     | 3           | 6259 Maillol          | Harvey, 81                  | Apr 2                      | 3           |
| 3814 Hoshi-no-mura  | Harvey, 81                  | Apr 22                     | 3           | 6282 Edwelda          | Harvey, 81                  | Jan 1                      | 3           |
| 3823 Yoriii         | Harvey, 81                  | Feb 15                     | 3           | 6286 1983 EU          | Harvey, 81                  | Mar 1                      | 3           |
| 3828 Hoshino        | Harvey, 81                  | Dec 11                     | 3           | 6397 1991 BJ          | Harvey, 81                  | Feb 23                     | 3           |
| 3889 Menshikov      | Harvey, 81                  | Aug 9                      | 3           | 6403 Steverin         | Harvey, 81                  | May 16                     | 3           |
|                     |                             | 0.4f@16.1                  |             | 6434 Jewitt           | Harvey, 81                  | Jul 28                     | 3           |
| 4004 List'ev        | Harvey, 81                  | Sep 22                     | 3           | 6464 Kaburaki         | Harvey, 81                  | Jan 23                     | 3           |
| 4020 Dominique      | Harvey, 81                  | Oct 15                     | 3           | 6470 Aldrin           | Harvey, 81                  | Nov 19                     | 3           |
| 4051 Hatanaka       | Harvey, 81                  | Nov 19                     | 3           | 6496 Kazuko           | Harvey, 81                  | May 16                     | 3           |
| 4073 Ruianzhongxue  | Harvey, 81                  | Aug 18                     | 6           | 6520 Sugawa           | Harvey, 81                  | Jun 21                     | 3           |
| 4103 Chahine        | Faure, 20                   | Oct 18                     | 2           | 6536 Vysochinska      | Harvey, 81                  | Aug 19                     | 3           |
| 4117 Wilke          | Harvey, 81                  | Aug 11                     | 3           | 6542 Jacquescousteu   | Harvey, 81                  | Mar 1                      | 3           |
| 4193 Salanave       | Harvey, 81                  | Oct 8                      | 3           | 6561 Gruppetta        | Harvey, 81                  | Sep 22                     | 3           |
| 4315 Pronik         | Harvey, 81                  | Oct 18                     | 3           | 6569 Ondaatje         | Harvey, 81                  | Jun 21                     | 6           |
| 4318 Bata           | Harvey, 81                  | Jan 29                     | 3           | 6586 Seydler          | Harvey, 81                  | Jan 28                     | 3           |
| 4322 Billjackson    | Harvey, 81                  | Oct 19                     | 3           | 6594 Tasman           | Harvey, 81                  | Sep 21                     | 3           |
| 4326 McNally        | Harvey, 81                  | Jun 14                     | 3           | 6603 Marycregg        | Harvey, 81                  | Apr 22                     | 3           |
| 4380 Geyer          | Harvey, 81                  | Oct 18                     | 3           | 6615 Plutarchos       | Harvey, 81                  | May 12                     | 3           |
| 4582 Hank           | Harvey, 81                  | Apr 22                     | 3           | 6663 Tatebayashi      | Harvey, 81                  | Jun 26                     | 3           |
| 4653 Tommaso        | Harvey, 81                  | Apr 19                     | 3           | 6709 Hiromiyuki       | Harvey, 81                  | Nov 17                     | 3           |
| 4771 Hayashi        | Harvey, 81                  | Oct 14                     | 3           | 6759 1980 KD          | Harvey, 81                  | Apr 17                     | 3           |
| 4787 Shul'zhenko    | Harvey, 81                  | Sep 21                     | 3           | 6800 Saragamine       | Harvey, 81                  | Oct 7                      | 3           |
| 4804 Pasteur        | Rayon, 45                   | Nov 18                     | 2C          | 6846 Kansazan         | Harvey, 81                  | Aug 18                     | 3           |
| 4811 Semashko       | Harvey, 81                  | Aug 19                     | 3           | 6889 1971 RA          | Harvey, 81                  | Sep 14                     | 3           |
| 4851 Vodop'yanova   | Harvey, 81                  | Mar 1                      | 3           | 6919 Tomonaga         | Harvey, 81                  | Feb 28                     | 3           |
| 4933 Tylerlinder    | Harvey, 81                  | Apr 22                     | 3           | 6925 Susumu           | Harvey, 81                  | May 16                     | 3           |
| 4942 Munroe         | Harvey, 81                  | May 2                      | 3           | 6977 Jaucourt         | Harvey, 81                  | Jun 1                      | 3           |
| 4978 Seitz          | Harvey, 81                  | Oct 15                     | 3           | 7014 Nietzsche        | Harvey, 81                  | Jul 27                     | 3           |
| 4997 Ksana          | Harvey, 81                  | Sep 21                     | 3           | 7024 1992 PA4         | Harvey, 81                  | Oct 19                     | 3           |
| 5088 Tancredi       | Harvey, 81                  | Jan 28                     | 3           | 7094 Godaisan         | Harvey, 81                  | Sep 21                     | 3           |
| 5124 Muraoka        | Harvey, 81                  | Apr 16                     | 3           | 7104 Manyousyu        | Harvey, 81                  | Feb 15                     | 3           |
| 5152 Labs           | Harvey, 81                  | Aug 19                     | 3           | 7106 Kondakov         | Harvey, 81                  | Aug 11                     | 3           |
| 5193 Tanakwataru    | Harvey, 81                  | Jan 21                     | 3           | 7118 Kuklov           | Harvey, 81                  | Jan 20                     | 3           |
| 5220 Vika           | Harvey, 81                  | Oct 7                      | 3           | 7131 Longtom          | Harvey, 81                  | Nov 19                     | 3           |
| 5346 1981 QE3       | Harvey, 81                  | Sep 14                     | 3           | 7247 Robertstirling   | Harvey, 81                  | Sep 22                     | 6           |
| 5406 Jonjoseph      | Harvey, 81                  | Feb 22                     | 3           | 7318 Dyukov           | Harvey, 81                  | Sep 21                     | 3           |
| 5464 Weller         | Harvey, 81                  | Oct 14                     | 3           |                       |                             | 0.6f@16.0                  |             |
| 5501 1982 FF2       | Harvey, 81                  | Apr 14                     | 3           | 7329 Bettadotto       | Harvey, 81                  | Apr 14                     | 6           |
| 5527 1991 UQ3       | Harvey, 81                  | Apr 19                     | 3           | 7333 Bec-Borsenberger | Harvey, 81                  | Sep 14                     | 3           |
| 5542 Moffatt        | Harvey, 81                  | Sep 21                     | 3           | 7368 Haldancohn       | Harvey, 81                  | Feb 15                     | 3           |
|                     |                             | 0.6f@15.8                  |             | 7451 Verbitskaya      | Harvey, 81                  | Jul 14                     | 3           |
| 5558 Johnnapier     | Harvey, 81                  | Feb 28                     | 3           | 7456 Doressoundiram   | Harvey, 81                  | Jun 26                     | 3           |
|                     |                             | 0.3b@16.1                  |             | 7540 1997 AK21        | Harvey, 81                  | Jan 6                      | 3           |
| 5562 1991 VS        | Harvey, 81                  | Jan 22                     | 3           | 7605 Cindygraber      | Harvey, 81                  | Jan 6                      | 3           |
| 5577 Priestly       | Harvey, 81                  | Jan 1                      | 3           | 7609 1995 WX3         | Harvey, 81                  | Apr 19                     | 3           |
| 5600 1991 UY        | Harvey, 81                  | Jan 23                     | 3           | 7632 Stanislav        | Harvey, 81                  | Jan 29                     | 3           |

| MINOR PLANET         | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. | MINOR PLANET          | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. |
|----------------------|-----------------------------|----------------------------|-------------|-----------------------|-----------------------------|----------------------------|-------------|
| 7658 1993 BM12       | Harvey, 81                  | Apr 21                     | 3           | 12947 3099 T-1        | Harvey, 81                  | Jan 6                      | 3           |
| 7686 Wolfenst        | Harvey, 81                  | Feb 22                     | 3           | 13071 1991 RT5        | Harvey, 81                  | Oct 14                     | 3           |
| 7708 Fennimore       | Harvey, 81                  | Apr 4                      | 3           | 13111 Papacomas       | Harvey, 81                  | Jul 12                     | 6           |
| 7753 1988 XB         | Harvey, 81                  | Nov 29                     | 6           | 13380 Yamamohammed    | Harvey, 81                  | Apr 22                     | 3           |
| 7760 1990 RW3        | Harvey, 81                  | Oct 14                     | 3           | 13390 Bouska          | Harvey, 81                  | Jan 22                     | 3           |
| 7804 Boesgaard       | Harvey, 81                  | Jul 27                     | 3           | 13398 1999 RF62       | Harvey, 81                  | Jan 21                     | 3           |
| 7818 Muirhead        | Harvey, 81                  | Jan 21                     | 6           | 13491 1984 UJ1        | Harvey, 81                  | Nov 19                     | 3           |
| 7910 Alexsola        | Harvey, 81                  | May 11                     | 3           | 13492 Vitalijzakharov | Harvey, 81                  | Nov 20                     | 3           |
| 8115 Sakabe          | Harvey, 81                  | May 2                      | 3           | 13538 1991 ST         | Harvey, 81                  | Apr 22                     | 3           |
| 8143 Nezval          | Harvey, 81                  | Dec 11                     | 3           | 13567 Urabe           | Harvey, 81                  | Jan 1                      | 3           |
| 8165 Gandig          | Harvey, 81                  | Apr 19                     | 3           | 13578 1993 MK         | Harvey, 81                  | Jun 26                     | 3           |
| 8246 Kotov           | Harvey, 81                  | Sep 14                     | 3           | 13581 1993 QX4        | Harvey, 81                  | Feb 22                     | 3           |
| 8256 Shenzhou        | Harvey, 81                  | Sep 21                     | 3           | 13920 Montecorvino    | Harvey, 81                  | Sep 14                     | 3           |
| 8285 1991 UK3        | Harvey, 81                  | Feb 15                     | 3           | 13923 Peterhof        | Harvey, 81                  | Nov 21                     | 3           |
| 8294 Takayuki        | Harvey, 81                  | Jan 28                     | 3           | 13977 Frisch          | Faure, 35                   | Jun 23                     | 4           |
| 8295 Toshifukushima  | Harvey, 81                  | Nov 21                     | 3           | 14006 Sakamotofumio   | Harvey, 81                  | Oct 20                     | 3           |
| 8321 Akim            | Harvey, 81                  | Jan 29                     | 3           | 14198 1998 XZ73       | Harvey, 81                  | Oct 20                     | 3           |
| 8357 O'Connor        | Harvey, 81                  | Oct 15                     | 3           | 14564 Heasley         | Harvey, 81                  | Jul 14                     | 3           |
| 8514 1991 PK15       | Harvey, 81                  | Aug 19                     | 3           | 14613 Sanchez         | Harvey, 81                  | Oct 15                     | 3           |
| 8655 1990 QJ1        | Harvey, 81                  | Oct 6                      | 3           | 14989 Tutte           | Harvey, 81                  | Oct 14                     | 3           |
| 8749 Beatles         | Harvey, 81                  | Dec 11                     | 3           | 15129 Sparks          | Harvey, 81                  | Oct 20                     | 3           |
| 8768 Barnowl         | Harvey, 81                  | Jan 6                      | 3           | 15430 1998 UR31       | Harvey, 81                  | May 12                     | 3           |
| 8852 Buxus           | Harvey, 81                  | Nov 19                     | 3           | 15436 1998 VU30       | Harvey, 81                  | Oct 8                      | 3           |
| 8995 Rachelstevenson | Harvey, 81                  | Aug 19                     | 3           | 15689 1981 UP25       | Harvey, 81                  | May 16                     | 3           |
| 9011 Angelou         | Harvey, 81                  | Sep 21                     | 3           | 15791 Yoshiwatanabe   | Harvey, 81                  | Jan 1                      | 3           |
| 9013 Sansaturo       | Harvey, 81                  | Jul 27                     | 3           | 15799 1993 XN         | Harvey, 81                  | Jan 22                     | 3           |
| 9034 Oleyuria        | Harvey, 81                  | Aug 11                     | 3           | 15985 1998 WU20       | Harvey, 81                  | May 11                     | 3           |
| 9037 1990 UJ2        | Harvey, 81                  | Oct 8                      | 3           | 16446 1989 MH         | Harvey, 81                  | Apr 21                     | 3           |
| 9177 1990 YA         | Harvey, 81                  | Jan 1                      | 3           | 16447 Vauban          | Harvey, 81                  | Sep 11                     | 3           |
| 9246 Neimeyer        | Harvey, 81                  | Aug 18                     | 3           | 16466 Piyashiriyama   | Harvey, 81                  | Jan 1                      | 3           |
| 9308 Randyrose       | Harvey, 81                  | Jul 27                     | 3           | 16528 Terakado        | Harvey, 81                  | Aug 19                     | 3           |
| 9362 Miyajima        | Harvey, 81                  | Sep 21                     | 3           | 16559 1991 VA3        | Harvey, 81                  | Aug 18                     | 3           |
| 9545 Petrovedomosti  | Harvey, 81                  | Jul 27                     | 3           | 16681 1994 EV7        | Harvey, 81                  | Feb 15                     | 6           |
| 9574 Taku            | Harvey, 81                  | Apr 17                     | 3           | 16704 1995 ED8        | Harvey, 81                  | Feb 28                     | 3           |
| 9741 Solokhin        | Harvey, 81                  | Feb 15                     | 3           | 16908 Groeselenberg   | Harvey, 81                  | Jan 20                     | 3           |
| 9893 1996 AA1        | Harvey, 81                  | Apr 14                     | 3           | 16986 Archivestef     | Harvey, 81                  | Feb 28                     | 3           |
| 9896 1996 BL17       | Harvey, 81                  | Apr 16                     | 3           | 17012 1999 CY80       | Harvey, 81                  | May 11                     | 3           |
| 9933 Alekseev        | Harvey, 81                  | Dec 11                     | 3           | 17485 1991 RP9        | Harvey, 81                  | Dec 11                     | 3           |
| 10017 Jaosungi       | Harvey, 81                  | Oct 18                     | 3           | 17509 Ikumadan        | Harvey, 81                  | Feb 22                     | 3           |
|                      |                             |                            | 0.4b@15.8   | 17711 1997 WA7        | Harvey, 81                  | Apr 21                     | 3           |
| 10036 McGaha         | Harvey, 81                  | Aug 9                      | 3           | 17814 1998 FH113      | Harvey, 81                  | Jul 14                     | 3           |
| 10143 Kamogawa       | Harvey, 81                  | Feb 15                     | 3           | 17953 1999 JB20       | Harvey, 81                  | May 11                     | 3           |
| 10164 Akusekijima    | Harvey, 81                  | Jan 20                     | 3           |                       |                             |                            | 0.5f@15.9   |
| 10287 Smale          | Harvey, 81                  | Oct 14                     | 3           | 18029 1999 KA16       | Harvey, 81                  | May 2                      | 3           |
| 10608 Mameta         | Harvey, 81                  | Nov 19                     | 3           | 18129 2000 OH5        | Harvey, 81                  | Feb 15                     | 3           |
| 10668 Plansos        | Harvey, 81                  | Apr 22                     | 3           | 18285 Vladplatonov    | Harvey, 81                  | Apr 19                     | 3           |
| 10793 Quito          | Rayon, 45                   | Nov 18                     | 1C          | 18399 Tentoumushi     | Harvey, 81                  | Nov 17                     | 3           |
| 10805 Iwano          | Harvey, 81                  | Jan 5                      | 3           | 18418 Ujibe           | Harvey, 81                  | Oct 18                     | 3           |
| 10909 1997 XB10      | Harvey, 81                  | Jan 22                     | 3           | 18640 1998 EF9        | Harvey, 81                  | Dec 15                     | 3           |
| 10944 1999 FJ26      | Harvey, 81                  | Aug 11                     | 3           | 19120 Doronina        | Harvey, 81                  | Aug 9                      | 6           |
| 11007 Granahan       | Harvey, 81                  | Oct 6                      | 3           | 19204 Joshuatree      | Harvey, 81                  | Jun 26                     | 3           |
| 11141 Jindrawalter   | Harvey, 81                  | Jun 26                     | 3           |                       |                             |                            | 0.5f@15.9   |
| 11192 1998 XX49      | Harvey, 81                  | Jan 6                      | 3           | 19370 Yukyung         | Harvey, 81                  | Jan 21                     | 3           |
| 11279 1989 TC        | Harvey, 81                  | Sep 21                     | 3           | 19402 1998 EG14       | Harvey, 81                  | Oct 20                     | 3           |
| 11365 NASA           | Harvey, 81                  | Jan 20                     | 3           | 19511 1998 MC45       | Harvey, 81                  | Oct 14                     | 3           |
| 11401 Pierralba      | Harvey, 81                  | Aug 9                      | 3           | 19551 Peterborden     | Harvey, 81                  | Oct 8                      | 3           |
|                      |                             |                            | 1.0f@16.1   | 19600 1999 NV41       | Harvey, 81                  | Nov 20                     | 3           |
| 11526 1991 UL3       | Harvey, 81                  | Sep 4                      | 3           | 19755 2000 EH34       | Harvey, 81                  | Nov 16                     | 3           |
| 11528 Mie            | Harvey, 81                  | Aug 18                     | 6           | 19764 2000 NF5        | Harvey, 81                  | Sep 11                     | 6           |
| 11575 1994 BN4       | Harvey, 81                  | Sep 7                      | 3           | 20170 1996 VM30       | Harvey, 81                  | Sep 21                     | 3           |
| 11684 1998 FY11      | Harvey, 81                  | May 16                     | 3           | 20350 1998 HV125      | Harvey, 81                  | Oct 15                     | 3           |
| 11789 Kempowski      | Harvey, 81                  | Apr 22                     | 3           | 21182 1994 EC2        | Harvey, 81                  | Sep 14                     | 3           |
| 11894 1991 GW        | Harvey, 81                  | Apr 2                      | 3           | 21242 1995 WZ41       | Faure, 20                   | Nov 19                     | 3           |
| 11958 Galiani        | Harvey, 81                  | Nov 21                     | 3           |                       | Harvey, 81                  | Nov 17                     | 3           |
| 12014 Bobhawkes      | Harvey, 81                  | Feb 22                     | 3           |                       | Rayon, 45                   | Nov 18                     | 2C          |
| 12256 1989 CJ8       | Harvey, 81                  | Feb 22                     | 3           | 21561 Masterman       | Harvey, 81                  | Nov 19                     | 3           |
| 12283 1991 EC        | Harvey, 81                  | Jan 5                      | 3           | 21757 1999 RQ194      | Harvey, 81                  | Oct 18                     | 3           |
| 12706 Tanezaki       | Harvey, 81                  | Oct 15                     | 3           | 22135 2000 UA100      | Harvey, 81                  | Jun 21                     | 3           |
| 12742 Delisle        | Harvey, 81                  | Oct 15                     | 3           | 22759 1998 XA4        | Harvey, 81                  | Nov 16                     | 3           |
| 12856 1998 HH93      | Harvey, 81                  | Jan 20                     | 3           | 23231 2000 WT59       | Harvey, 81                  | Jun 1                      | 3           |
| 12920 1998 VM15      | Harvey, 81                  | Jun 14                     | 3           | 23648 Kolar           | Harvey, 81                  | Sep 14                     | 3           |

| MINOR PLANET      | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. | MINOR PLANET      | OBSERVER &<br>APERTURE (cm) | OBSERVING<br>PERIOD (2019) | NO.<br>OBS. |
|-------------------|-----------------------------|----------------------------|-------------|-------------------|-----------------------------|----------------------------|-------------|
| 23880 Tongil      | Harvey, 81                  | Oct 19                     | 3           | 51442 2001 FZ25   | Harvey, 81                  | Sep 21                     | 3           |
| 23974 1999 CK12   | Harvey, 81                  | Jan 21                     | 3           | 51866 2001 PH3    | Harvey, 81                  | Dec 15                     | 3           |
| 23997 1999 RW27   | Harvey, 81                  | Oct 15                     | 3           | 51917 2001 QQ83   | Rayon, 45                   | Apr 10                     | 2C          |
|                   |                             | 1.0f@15.5                  |             | 52768 1998 OR2    | Faure, 20                   | Apr 14                     | 3           |
| 24280 Rohanderson | Harvey, 81                  | Sep 21                     | 3           |                   | Pryal, 20                   | Apr 26-28                  | 6           |
| 24298 1999 XC221  | Harvey, 81                  | Oct 7                      | 3           |                   | Rayon, 45, 15               | Apr 10-14                  | 4C          |
| 24433 2000 CF83   | Harvey, 81                  | Jul 27                     | 3           |                   | Werner, 20                  | Apr 24-May 2               | 10          |
| 25068 1998 QV88   | Harvey, 81                  | Aug 11                     | 3           | 53308 1999 HJ8    | Rayon, 45                   | Apr 10                     | 1C          |
| 25505 1999 XQ95   | Harvey, 81                  | Sep 11                     | 3           | 53435 1999 VM40   | Rayon, 45                   | Nov 19                     | 2C          |
| 25995 2001 FA83   | Harvey, 81                  | Aug 11                     | 3           | 56086 1999 AA21   | Harvey, 81                  | Sep 14                     | 3           |
| 26432 1999 XZ202  | Harvey, 81                  | Nov 21                     | 3           | 65854 1997 EH46   | Harvey, 81                  | Oct 6                      | 3           |
| 26818 1987 QM     | Harvey, 81                  | Oct 6                      | 3           | 68130 2001 AO17   | Harvey, 81                  | Aug 18                     | 3           |
| 26834 1990 RM9    | Harvey, 81                  | Oct 19                     | 3           | 76818 Brianenke   | Harvey, 81                  | Jan 21                     | 3           |
| 28056 1998 MK5    | Harvey, 81                  | Nov 21                     | 3           | 85184 1991 JG1    | Harvey, 81                  | May 10                     | 6           |
| 28291 1999 CX52   | Harvey, 81                  | Oct 19                     | 3           | 136108 Haumea     | Faure, 35                   | May 26-27                  | 2           |
|                   |                             | 0.3f@16.3                  |             |                   | Rayon, 25                   | May 26                     | 1C          |
| 28565 2000 EO58   | Harvey, 81                  | Jul 28                     | 6           | 137311 1999 TX9   | Harvey, 81                  | Nov 16                     | 6           |
| 28887 2000 KQ58   | Harvey, 81                  | Dec 11                     | 3           | 137924 2000 BD19  | Harvey, 81                  | Feb 2                      | 6           |
| 30717 1937 UD     | Harvey, 81                  | Sep 21                     | 3           | 153201 2000 WO107 | Harvey, 81                  | Nov 29                     | 6           |
|                   |                             | 0.5f@15.8                  |             | 163348 2002 NN4   | Harvey, 81                  | Jun 13                     | 6           |
| 30971 1995 DJ     | Harvey, 81                  | Oct 18                     | 3           | 163373 2002 PZ39  | Harvey, 81                  | Jan 28                     | 6           |
| 33087 1997 XX     | Harvey, 81                  | May 11                     | 3           | 163902 2003 SW222 | Harvey, 81                  | Dec 11                     | 6           |
| 33881 2000 JK66   | Harvey, 81                  | Jun 21                     | 3           | 183230 2002 TC58  | Harvey, 81                  | Jul 14                     | 3           |
| 34373 2000 RT44   | Harvey, 81                  | Aug 27                     | 3           | 242450 2004 QY2   | Harvey, 81                  | Jul 2                      | 6           |
| 34882 2001 UK66   | Harvey, 81                  | May 2                      | 3           | 247484 2002 LC24  | Harvey, 81                  | Jan 1                      | 6           |
| 35371 Yokonozaki  | Harvey, 81                  | Sep 22                     | 3           | 420302 2011 XZ1   | Faure, 45                   | Aug 22                     | 3           |
| 35810 1999 JB44   | Harvey, 81                  | Oct 7                      | 3           |                   | Harvey, 81                  | Jun 26                     | 6           |
| 36260 1999 XQ111  | Harvey, 81                  | May 2                      | 3           | 437316 2013 OS3   | Harvey, 81                  | Jan 20                     | 6           |
| 37152 2000 VV56   | Harvey, 81                  | Apr 4                      | 6           | 438908 2009 XO    | Harvey, 81                  | May 7-10                   | 18          |
| 37187 2000 WP60   | Harvey, 81                  | Jul 28                     | 3           | 498066 2007 RM133 | Harvey, 81                  | Jul 2                      | 6           |
| 41331 1999 XB232  | Harvey, 81                  | Nov 21                     | 3           | 539940 2017 HW1   | Harvey, 81                  | Apr 22                     | 6           |
| 42570 1996 YA2    | Harvey, 81                  | Feb 15                     | 3           | 2000 KA           | Harvey, 81                  | May 12                     | 6           |
| 42685 1998 JY     | Harvey, 81                  | Oct 15                     | 3           | 2006 NL           | Harvey, 81                  | Jul 12                     | 6           |
| 46875 1998 QD104  | Harvey, 81                  | Jan 20                     | 3           | 2013 UX14         | Harvey, 81                  | Oct 18                     | 6           |
| 48439 1989 WR2    | Harvey, 81                  | Dec 11                     | 4           | 2015 FC35         | Harvey, 81                  | Apr                        | 6           |
| 48898 1998 MO5    | Harvey, 81                  | Jul 14                     | 6           | 2016 PN           | Harvey, 81                  | Jul 30                     | 6           |
| 49636 1999 HJ1    | Harvey, 81                  | Jul 12                     | 3           | 2019 WC5          | Harvey, 81                  | Jan 9                      | 6           |
| 49737 1999 VS112  | Harvey, 81                  | May 16                     | 3           | 2020 BT14         | Harvey, 81                  | Feb 3                      | 6           |
| 49978 1999 YT5    | Harvey, 81                  | Oct 15                     | 3           | 2020 RC           | Harvey, 81                  | Sep 7                      | 6           |
| 50713 2000 EZ135  | Faure, 20                   | Oct 18                     | 2           | 2020 ST1          | Harvey, 81                  | Nov 16                     | 6           |