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# PUBLICATION OF TOPOGRAPHIC ATLAS AND CONTROL NETWORK OF MARS

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To aid planetary studies and the planning of future Mars missions, we will submit by the end of fiscal year 1992 the Topographic Atlas and Control Network of Mars for publication as a NASA Special Publication. It will consist of reduced versions of 108 1:2 million-scale photomosaics that show contour lines from topographic maps at the same scale, as well as precisely located control points (Wu et al., 1990). The control points are from the planetwide network (Wu and Schafer, 1984), which is not only instrumental in the compilation of maps at various scales, but is also widely used in other research such as studies of Mars' gravity and atmosphere.

Figure 1, a combination of MC 8-NW and -SW, is an example of the photomosaics to be included in the atlas. Contour lines in the figure are at 1-km intervals. The final adjusted ground coordinates and elevations of the 77 control points shown are given in Table 1. The last column in the table lists the topographic datum (zero elevation) that can be used to compute the solid radius of the control point from the center of mass of Mars.

The atlas will also include information such as the adjusted C-matrices of each image, descriptions of the methods used and their accuracy, and guidelines for users.

## References

Wu, S. S. C., and Schafer, F. J., 1984, Mars control network, in Technical Papers of the 50th Annual Meeting of the American Society of Photogrammetry and Remote Sensing, Washington, D.C., March 11-16, v. 2, p. 456-463.

Wu, S. S. C., Billideau, J. S., Howington-Kraus, A. E., and Spare, B. A., 1990, Publication of Mars control network: Report of Planetary Geology and Geophysics Program--1989, NASA Tech. Memo. 4210, p. 576-578.

Table 1: Control point information (picture numbers, ground coordinates, and topographic datum) for MC8W.

Figure 1: Distribution of control points on topographic map of MC8W.


**Figure 1. Distribution of Control Points on the Contour Map of MC 8-W (MC 8-NW and -SW combined)**

Table 1. Control point information of MC 8-W (picture number, ground coordinates, and topographic datum).

| ID | PICTURE NUMBERS | | | | | | LON | LAT | ELEV(M) | DATUM(M) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3125 | 789A47 | 722A69 | 722A70 | | | | 68 26 18.700 | 20 06 15.948 | -1925.039 | 3391192.142 |
| 3126 | 722A69 | 646A65 | | | | | 170 04 25.731 | 16 10 16.956 | -1977.958 | 3391881.884 |
| 3129 | 646A44 | 687A28 | | | | | 174 03 51.922 | 2 06 19.996 | -74.815 | 3393191.589 |
| 10004 | 750A86 | 646A65 | | | | | 175 41 45.917 | 9 30 34.642 | -1917.798 | 3392709.926 |
| 10010 | 687A45 | 646A65 | 750A84 | | | | 179 25 53.641 | 10 04 28.046 | -1015.414 | 3392636.380 |
| 10801 | 690A06 | 646A46 | 646A23 | | | | 158 01 14.751 | 2 50 59.348 | -955.360 | 3393515.645 |
| 10803 | 738A03 | 789A47 | 614A36 | 690A32 | 722A70 | 614A34 | 159 48 29.205 | 26 44 07.429 | -3066.405 | 3389890.577 |
| 10806 | 690A35 | 646A24 | 789A47 | 614A36 | 690A32 | 722A70 | 159 43 18.461 | 20 44 19.975 | -2912.572 | 3391266.406 |
| 10810 | 646A66 | 722A68 | 722A70 | 690A32 | 789A47 | | 168 46 39.547 | 27 19 35.132 | -1967.463 | 3389560.491 |
| 10813 | 690A35 | 738A03 | 614A36 | 690A32 | 789A47 | 722A70 | 160 29 35.155 | 21 37 34.166 | -2215.069 | 3391058.160 |
| 10814 | 690A35 | 646A24 | 789A47 | 690A32 | 722A69 | 722A70 | 166 22 17.561 | 20 07 23.564 | -1764.774 | 3391226.798 |
| 10815 | 690A35 | 646A24 | 722A69 | | | | 164 03 20.179 | 15 55 26.720 | -1925.866 | 3392042.670 |
| 10858 | 690A35 | 646A24 | | | | | 157 53 07.299 | 16 15 17.134 | -1778.380 | 3392166.097 |
| 10859 | 614A36 | 690A32 | 646A24 | 722A70 | 789A47 | 738A03 | 161 27 09.736 | 24 01 04.333 | -1548.579 | 3390501.245 |
| 10860 | 646A66 | 722A70 | 690A32 | 738A03 | 614A36 | 614A34 | 165 45 14.692 | 26 24 24.662 | -2800.334 | 3389837.632 |
| 10861 | 690A35 | 722A70 | 690A32 | 722A69 | 646A24 | 789A47 | 164 14 56.454 | 19 25 13.819 | -1412.662 | 3391411.311 |
| 10862 | 690A35 | 789A47 | 722A70 | 722A69 | 646A24 | 690A32 | 164 32 42.180 | 20 39 27.574 | -2232.546 | 3391157.997 |
| 10864 | 646A66 | 722A70 | 789A47 | 722A69 | | | 169 23 47.970 | 22 05 22.016 | -1612.144 | 3390767.173 |
| 10865 | 646A66 | 722A70 | 690A32 | 789A47 | 722A69 | | 166 35 46.066 | 21 59 32.889 | -903.116 | 3390835.977 |
| 10866 | 789A47 | 722A70 | 690A32 | 722A69 | 646A24 | | 164 41 24.071 | 21 43 02.529 | -1376.043 | 3390933.977 |
| 10867 | 738A03 | 646A24 | 690A32 | 722A70 | 722A69 | 789A47 | 162 52 43.003 | 23 28 40.973 | -1346.599 | 3390589.354 |
| 10868 | 646A66 | 722A70 | 690A32 | 789A47 | 614A36 | 614A34 | 165 03 52.302 | 24 10 54.655 | -1806.903 | 3390380.024 |
| 10870 | 690A35 | 646A24 | 722A69 | | | | 162 46 34.138 | 12 47 55.961 | -1908.758 | 3392542.208 |
| 10871 | 690A35 | 722A70 | 690A32 | 614A36 | 646A24 | 789A47 | 163 23 55.487 | 21 51 38.768 | -1773.329 | 3390933.023 |
| 10872 | 646A66 | 722A70 | 789A47 | 646A24 | 722A69 | | 169 41 06.463 | 19 48 03.624 | -1708.513 | 3391231.917 |
| 10875 | 738A02 | 646A66 | 722A68 | 722A70 | 789A47 | | 171 10 04.029 | 29 11 12.801 | -1452.737 | 3389058.354 |
| 10877 | 687A28 | 750A85 | 646A44 | 646A23 | 646A46 | | 165 06 39.454 | 45 58.133 | -966.956 | 3393355.487 |
| 10881 | 646A66 | 722A70 | 722A68 | 789A47 | | | 173 05 51.451 | 27 23 00.774 | -1264.036 | 3389497.346 |
| 10882 | 646A66 | 722A70 | 789A47 | 722A68 | | | 172 31 37.842 | 24 22 31.723 | -1227.878 | 3390221.325 |
| 10885 | 722A68 | 646A66 | 789A65 | | | | 179 08 44.524 | 29 24 25.205 | -255.914 | 3388960.651 |
| 10886 | 722A68 | 646A66 | | | | | 178 53 11.124 | 26 02 51.618 | -2575.684 | 3389796.454 |
| 10887 | 646A66 | 722A68 | | | | | 179 37 12.273 | 23 15 18.484 | -1807.319 | 3390437.986 |
| 10888 | 646A65 | 722A67 | | | | | 179 50 18.721 | 17 34 24.587 | -1923.690 | 3391568.201 |
| 10889 | 646A66 | 722A67 | 646A65 | 722A69 | | | 176 00 01.771 | 17 09 44.586 | -2625.244 | 3391651.815 |
| 10890 | 690A35 | 738A03 | 614A36 | 690A32 | 722A70 | 646A24 | 162 06 34.566 | 21 22 14.431 | -966.821 | 3391069.043 |
| 10892 | 690A35 | 646A24 | | | | | 157 47 06.371 | 14 24 18.148 | -1698.919 | 3392464.750 |
| 10894 | 690A35 | 722A69 | 614A34 | | | | 160 23 19.956 | 17 50 53.106 | -1908.965 | 3391808.999 |
| 10895 | 690A35 | 646A24 | 722A69 | 646A23 | | | 159 54 17.769 | 13 51 00.719 | -1336.716 | 3392478.502 |
| 10896 | 646A66 | 722A67 | 646A65 | 722A69 | | | 172 00 49.561 | 19 39 58.183 | -1859.658 | 3391226.932 |
| 10897 | 722A67 | 646A65 | 646A66 | 722A69 | | | 172 47 41.343 | 20 48 46.680 | -1450.515 | 3390990.278 |
| 11650 | 646A44 | 687A28 | 750A86 | | | | 169 09 03.714 | 38 12.843 | -613.311 | 3393277.508 |
| 20753 | 646A44 | 687A28 | 687A14 | 687A16 | 750A86 | | 178 16 18.575 | 3 18 31.249 | -539.569 | 3393130.163 |
| 20754 | 646A44 | 687A28 | 687A14 | 750A86 | 687A16 | | 178 02 38.219 | 1 54 26.667 | -378.379 | 3393173.165 |
| 20755 | 646A44 | 687A28 | 750A86 | | | | 172 15 33.672 | 2 39 02.225 | -221.482 | 3393195.313 |
| 20756 | 750A84 | 646A65 | 722A67 | | | | 177 52 54.222 | 13 34 20.014 | -1160.908 | 3392206.520 |
| 20757 | 646A65 | 750A84 | 722A67 | | | | 175 44 58.090 | 13 18 16.414 | -947.533 | 3392254.447 |
| 20760 | 646A66 | 646A65 | 722A68 | | | | 178 25 15.051 | 20 38 15.833 | -582.425 | 3390991.289 |
| 20761 | 646A66 | 722A67 | 646A65 | 722A68 | 722A69 | | 176 54 08.745 | 20 44 10.095 | -693.179 | 3390976.183 |
| 20762 | 722A67 | 646A65 | 646A66 | 722A69 | | | 174 39 52.601 | 19 58 01.649 | -562.400 | 3391142.589 |
| 20768 | 722A67 | 646A65 | 722A69 | | | | 169 56 29.411 | 13 53 49.008 | -1268.726 | 3392235.647 |
| 20769 | 722A69 | 646A65 | | | | | 169 20 00.718 | 12 48 05.959 | -853.501 | 3392397.768 |
| 20770 | 722A69 | 646A65 | | | | | 168 17 48.043 | 12 47 28.372 | -818.590 | 3392417.454 |
| 20771 | 690A06 | 646A46 | 750A85 | 646A23 | | | 163 15 44.604 | 5 25 06.616 | -447.370 | 3393244.894 |
| 20772 | 690A35 | 646A46 | 646A23 | 750A85 | 722A69 | | 162 55 44.429 | 6 37 52.949 | -436.539 | 3393175.090 |
| 20785 | 646A65 | 750A86 | | | | | 174 44 31.971 | 7 37 04.784 | -851.756 | 3392890.724 |
| 20786 | 646A44 | 687A28 | 646A65 | 750A86 | 722A69 | | 173 05 40.846 | 6 23 53.718 | -203.277 | 3392998.940 |
| 20787 | 646A44 | 687A28 | 687A14 | 687A16 | 750A86 | 646A65 | 176 59 11.385 | 6 26 13.695 | -463.267 | 3392966.151 |
| 20788 | 750A84 | 722A67 | 646A65 | 750A86 | | | 175 17 29.483 | 11 00 00.708 | -1033.054 | 3392550.744 |
| 20789 | 646A65 | 750A86 | 722A69 | 722A67 | | | 172 14 52.850 | 9 50 24.617 | -524.722 | 3392708.633 |
| 20790 | 722A67 | 646A65 | 722A69 | | | | 173 04 49.529 | 16 10 56.271 | -804.734 | 3391841.306 |
| 20791 | 646A44 | 646A23 | 646A65 | 722A69 | | | 169 11 02.587 | 9 25 52.190 | -1680.163 | 3392795.658 |
| 20792 | 646A44 | 687A28 | 646A65 | 750A85 | 750A86 | 722A69 | 171 41 13.817 | 7 31 10.608 | -314.154 | 3392931.311 |
| 20793 | 722A67 | 646A65 | 722A69 | | | | 170 27 18.361 | 16 00 28.240 | -763.811 | 3391903.027 |
| 20795 | 690A35 | 646A23 | 722A69 | | | | 164 52 01.877 | 10 49 34.056 | -1191.302 | 3392734.606 |
| 20796 | 646A44 | 687A28 | 646A23 | 722A69 | 750A85 | | 168 18 41.569 | 6 48 08.537 | -865.840 | 3393040.095 |
| 20798 | 722A67 | 646A65 | 722A69 | | | | 170 10 11.645 | 11 52 26.909 | -926.427 | 3392504.153 |
| 21471 | 722A68 | 646A66 | | | | | 176 39 57.270 | 27 08 12.761 | -1259.761 | 3389537.125 |
| 21472 | 722A68 | 646A66 | | | | | 174 15 53.517 | 26 46 37.005 | -1309.975 | 3389637.802 |
| 21473 | 646A66 | 722A68 | 789A65 | | | | 178 29 02.088 | 27 53 13.084 | -1432.233 | 3389347.073 |
| 23571 | 690A06 | 646A46 | 750A85 | 646A23 | | | 157 54 31.416 | 5 13 44.854 | -1263.186 | 3393417.507 |
| 23758 | 646A23 | 750A85 | 722A69 | | | | 165 42 41.243 | 8 37 13.963 | -615.194 | 3392943.135 |
| 23759 | 687A28 | 646A46 | 646A23 | 750A85 | | | 166 24 18.801 | 5 12 43.265 | -693.175 | 3393181.619 |
| 23760 | 646A23 | 646A46 | 750A85 | 722A69 | | | 164 28 46.970 | 5 59 32.538 | -413.032 | 3393178.601 |
| 23761 | 687A28 | 646A23 | 646A46 | 750A85 | 722A69 | | 166 58 19.816 | 7 01 00.170 | -924.004 | 3393050.369 |
| 23762 | 646A65 | 722A69 | 646A23 | | | | 167 34 25.735 | 8 31 28.122 | -502.068 | 3392912.364 |
| 23763 | 687A28 | 750A85 | 646A44 | 646A23 | | | 167 53 05.632 | 4 45 29.352 | -988.445 | 3393176.288 |
| 23764 | 687A28 | 646A46 | 646A23 | 646A44 | 750A85 | | 165 47 42.675 | 3 24 11.348 | -814.893 | 3393279.722 |