

NOTES ON BASE

This map is one in a series of topographic map sheets covering the entire surface of Mars at a nominal scale of 1:5,000,000. First edition sheets in this series were compiled with Mariner 9 data. Selected parts of the series are being revised on the basis of Viking data. The mapping is described by Batson and others (1979). The Mariner 9 television experiment is described by Matzky and others (1975). A series of papers on the Viking mission is contained in Journal of Geophysical Research, v. 82, no. 28 (September 30, 1977).

ADOPTED FIGURE

The figure of Mars used for the computation of the map projection is an oblate spheroid (flattening of 1/92) with an equatorial radius of 3393.4 km and a polar radius of 3375.7 km.

PROJECTION

The Lambert conformal conic projection is used for this sheet with standard parallels at 35° S and 59° S. A scale of 1:4,336,000 at lat 30° S was chosen to match the scale at lat 30° of the adjacent Mercator projection. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are areographic (de Vasconcelos and others, 1973).

CONTROL

Planimetric control is provided by photogrammetric triangulation using Mariner 9 pictures (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the spacecraft. The first meridian passes through the crater Airy-0 (lat 51° S) within the crater Airy. In February 1978, the Mariner 9 control net was upgraded through the use of Viking data (Davies and others, 1978). Random discrepancies as large as 11 km exist between the Mariner 9 net (on which this sheet is based) and the new Viking net.

MAPPING TECHNIQUE

A series of mosaics of Lambert conformal conic projections of Mariner 9 pictures was assembled at 1:5,000,000. Shaded relief was portrayed with uniform illumination by the sun to the west, using air-photo techniques detailed by Inge (1972) and photogrammetric methods described by Inge and Bridges (1978). Sizes, shapes, and positions of features were taken from the base mosaic. In the first edition of the map (U.S. Geological Survey, 1976), various computer enhancements of many Mariner 9 pictures besides those in the base mosaic were examined in an attempt to portray the surface accurately as possible. (Computer enhancement of Mariner 9 pictures is described by Levinthal and others, 1973, and Green and others, 1975.) This rendition was revised through examination of Viking Orbiter pictures to produce the current version.

Shaded relief analysis and representation were made by Patricia M. Bridges.

Shaded relief revisions were made by Barbara J. Hall.

COLOR

No attempt was made on the map to precisely duplicate the color of the martian surface, although the color used may approximate it.

NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1977, and 1980) except for provisional names, which are listed below. Double- and triple-letter designations for craters refer to position on the map and are derived from a grid based on equidistant meridians and parallels; the alphabet (I and O omitted) runs in the direction of increasing longitude (W) and latitude (N). The complete designation of a crater is the name of the quadrangle followed by a double or triple letter. The prefix DIA (identifying the Diacria quadrangle) part of the complete designation but, for brevity, is not shown on most craters. Some craters have commemorative names; letter designations for these craters are shown in parentheses. Where craters lie on an adjoining map, their letters are derived from the other map; where craters lie exactly on the boundary of two maps, their letters are derived from the eastern or southern map.

Provisional names: Scandia Colles and Erebus Montes

MC-2: Abbreviation for Mars Chart 2

M 5M 48/150 RN: Abbreviation for Mars 1:5,000,000 series; center of sheet, lat 48° S, long 150° W; shaded relief map, R; nomenclature, N.

REFERENCES

Batson, R. M., Bridges, P. M., and Inge, J. L., 1979. Atlas of Mars, the 1:5,000,000 map series. National Aeronautics and Space Administration, NASA SP-438, 144 p.

Davies, M. E., 1973. Mariner 9: Primary control net. Photogrammetric Engineering, v. 39, no. 12, p. 2971-2982.

Davies, M. E., and Arthur, D. G., 1973. Martian surface coordinates. Journal of Geophysical Research, v. 78, no. 20, p. 8354-8394.

Davies, M. E., Katayama, F. V., and Roth, J. A., 1978. Control net of Mars. February 1978. The Rand Corporation, R-2309-NASA, February 1978.

Green, W. B., Soper, P. L., Krivon, J. E., Ruiz, R. M., Schwartz, A. A., and Seidman, J. B., 1975. Removal of instrument signatures from Mariner 9 television images of Mars. Applied Optics, v. 14, no. 2, p. 169-174.

Inge, J. L., 1972. Principles of lunar illustration: Aeronautical Chart and Information Center Reference Publication RP-72-1, 60 p.

Inge, J. L., and Bridges, P. M., 1976. Applied photogrammetry for aerial cartography. Photogrammetric Engineering and Remote Sensing, v. 42, no. 6, p. 749-760.

International Astronomical Union, 1971. Commission 16. Physical study of planets and satellites, in 14th General Assembly, Brighton, 1970. Proceedings: International Astronomical Union Transactions, v. 14B, p. 128-137.

—, 1974. Commission 16. Physical study of planets and satellites, and Lunar and martian nomenclature, in 15th General Assembly, Sydney, 1973. Proceedings: International Astronomical Union Transactions, v. 17B, p. 185-189, 217-221.

—, 1977. Working Group for Planetary System Nomenclature, in 16th General Assembly, Grenoble, 1976. Proceedings: International Astronomical Union Transactions, v. 16B, p. 321-325, 331-336, 355-362.

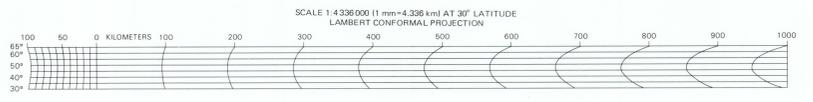
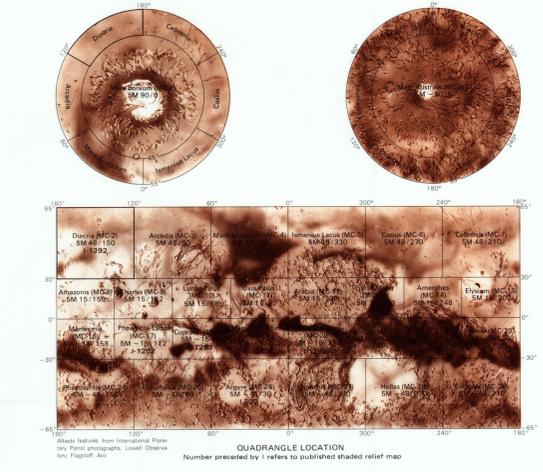
—, 1980. Working Group for Planetary System Nomenclature, in 17th General Assembly, Montreal, 1979. Proceedings: International Astronomical Union Transactions, v. 17B, p. 292-297.

Levinthal, E. C., Green, W. B., Curtis, J. A., Jabalka, E. D., Johnson, R. A., Sander, M. J., Seidman, J. B., Young, A. T., and Soderblom, L. A., 1973. Mariner 9: Image processing and products format, v. 18, no. 1, p. 75-101.

Matzky, Harold, Batson, R. M., Rogerson, W. T., Carr, M. H., McCasley, J. F., Milton, D. J., Wilday, R. L., Williams, D. E., Murray, B. C., Trumbull, W. H., Leighton, R. B., Sharp, R. V., Thompson, T. W., Bridges, G. A., Chumlyakov, P., Shlager, E. N., Swadlow, Carl, Pollack, J. B., Lederberg, Joshua, Levinthal, E. C., Hartmann, W. K., McCord, T. B., Smith, B. A., Davies, M. E., de Vasconcelos, G. D., and Levy, C. V., 1970. Television experiment for Mariner Mars 1971. Icarus, v. 12, no. 1, p. 16-45.

U.S. Geological Survey, 1976. Shaded relief map of the Diacria quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigations Series Map I-989.

de Vasconcelos, G. D., Davies, M. E., and Sturms, F. M., Jr., 1973. The Mariner 9 areographic coordinate system. Journal of Geophysical Research, v. 78, no. 20, p. 4395-4404.



1:2,000,000
Controlled photomosaics

I.No.	Quadrangle No.	MC 3 NW	MC 3 SC	MC 3 SE	MC 3 SW	MC 3 VE
1	1338					
2	1339					
3	1340					
4	1341					
5	1342					
6	1343					
7	1344					
8	1345					

Viking 1

Index No.	Picture No.	Index No.	Picture No.
1	808A23	9	811A23
2	808A24	10	811A24
3	808A25	11	811A25
4	808A26	12	811A26
5	808A27	13	811A27
6	808A28	14	811A28
7	811A21	15	811A22
8	811A22	16	811A23

INDEX TO MARINER 9 PICTURES

Index No.	DAS No.	Index No.	DAS No.
1	808099	25	822659
2	8011043	14	8227219
3	8080912	15	8228013
4	8154893	16	8227239
5	8226912	17	8226912
6	8310849	18	12327911
7	8226912	19	12328121
8	8012220	20	11411611
9	8011783	21	12162882
10	8011783	22	12162882
11	8155023	23	11482109
12	8226912	24	12629270
		25	8226912

INDEX TO VIKING SOURCES
This shaded relief map has been revised utilizing the 1:2,000,000 controlled photomosaics and the supplementary Viking pictures outlined above. Copies of various enhancements of these pictures are available from National Space Science Data Center, Code 601 Goddard Space Science Data Center, Greenbelt, MD 20771.

The mosaic used to control the positioning of features on this map was made with the Mariner 9 A-camera pictures outlined above. The DAS number may differ slightly (usually by 5) among various versions of the same picture.

SHADED RELIEF MAP OF THE DIACRIA QUADRANGLE OF MARS
MC-2
M 5M 48/150 RN
1981

NOTE TO USERS
Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 8, Room 84, 2225 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

For sale by Branch of Distribution, U.S. Geological Survey, 1200 South East Street, Arlington, VA 22202, and Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225



171 (03) 54
17/4

M(200)
I-1392
C1



M002154
12/16
C1