

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NOTES ON BASE

A series of topographic maps covering the entire surface of Mars at a nominal scale of 1:5,000,000 was originally compiled from Mariner 9 data. Details of the Mariner 9 mission that are related to the mapping are described by Blouin and others (1979). This revised version was based on Viking Orbiter images. A series of papers describing the Viking mission was published in the Journal of Geophysical Research (American Geophysical Union, 1977).

ADOPTED FIGURE

The figure of Mars used for the computation of the map projection is an oblate spheroid (flattening of 1/192) with an equatorial radius of 3393.8 km and a polar radius of 3375.7 km.

PROJECTION

The Mercator, Lambert conformal conic, and polar stereographic projections are used for this map series. The scale of the series is 1:5,000,000 at the equator. The projections have common scales of 1:4,236,000 at latitudes 20° and 1:4,209,000 at latitudes 65°. Standard parallels for the Lambert conformal conic projection are at latitudes 35.8° and 59.2°. Longitudes increase to the west in accordance with astronomical convention for Mars.

CONTROL

Planimetric control is provided by photogrammetric triangulation using Mariner 9 pictures (Davies, 1972; Davies and Arthur, 1973) and the radio-tracked position of the Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Airy 0 (lat. 5.19° S, long. 0°), located within the crater Airy.

MAPPING TECHNIQUE

A series of mosaics of Mariner 9 pictures was assembled at 1:5,000,000 using projections described above.

Shaded relief was portrayed using airbrush techniques detailed by Inge (1972) and photo-interpretive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. Sizes, shapes, and positions of craters were taken from the base mosaic. In the first edition of the map, various computer enhancements of many Mariner 9 pictures better those in the base mosaic were examined in an attempt to portray the surface as accurately as possible. This revised edition was produced by incorporating information derived from various enhancements of higher resolution Viking images of the map area.

Original shaded relief analysis and representation were made by Patricia M. Bridges.

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). 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 the crater is the name of the quadrangle followed by a double or triple letter. The prefix AIC (identifying the Arcadia quadrangle) is 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 mostly 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.

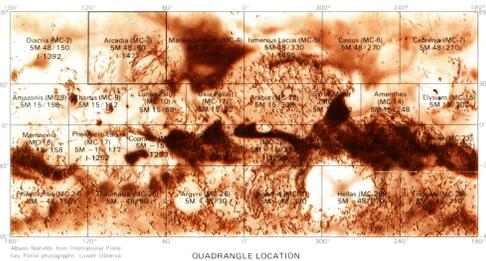
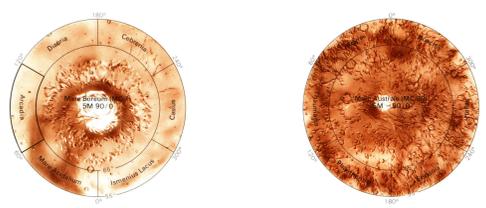
MC-3: Abbreviation for Mars Chart 3.
M 5M 48/90 RN: Abbreviation for Mars 1:5,000,000 series; center of sheet, lat. 48° N, long. 90° W; shaded relief map; (R) with nomenclature (N).

REFERENCES

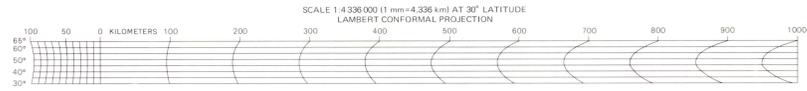
- American Geophysical Union, 1977. Journal of Geophysical Research, v. 82, no. 28, p. 3859-4681.
Blouin, R. M., Bridges, P. M., and Inge, J. L., 1979. Atlas of Mars, The 1:5,000,000 map series. National Aeronautics and Space Administration, NASA SP-438, 146 p.
Davies, M. E., 1973. Mariner 9: Primary control net. Photogrammetric Engineering, v. 39, no. 12, p. 1297-1302.
Davies, M. E., and Arthur, D. W. G., 1973. Martian surface coordinates. Journal of Geophysical Research, v. 78, no. 20, p. 4355-4394.
Inge, J. L., 1972. Principles of lunar illustration: Aeronautical Chart and Information Center Reference Publication 107-72.1, 60 p.
Inge, J. L., and Bridges, P. M., 1976. Applied photogrammetry for planetary cartography: Photogrammetric Engineering and Remote Sensing, v. 42, no. 6, p. 749-760.
International Astronomical Union, 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. 158, p. 105-108; 217-221.
1977. Working Group for Planetary System Nomenclature, in 16th General Assembly, Grenoble, 1976. Proceedings: International Astronomical Union Transactions, v. 166, p. 223-225; 331-336; 355-362.
1980. Working Group for Planetary System Nomenclature, in 17th General Assembly, Montreal, 1979. Proceedings: International Astronomical Union Transactions, v. 178, p. 293-297.



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Revised in June 1981 on behalf of the Planetary Geology Program, Planetary Division, Office of Space Science, National Aeronautics and Space Administration under contract W-13709.
This map supersedes I-963, the first edition of this sheet.



QUADRANGLE LOCATION
Number preceded by 1 refers to published shaded relief map.

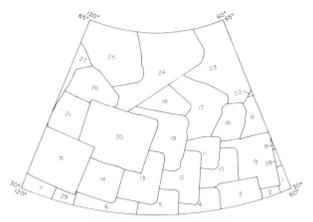


1:5,000,000
Controlled photostatics
I-No. Quadrangle No.
11302 MC-3E
11303 MC-3NE
11304 MC-3W
11305 MC-3SW



INDEX TO VIKING SOURCES
This shaded relief map has been revised utilizing 1:2,000,000 controlled photostatics and 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.

Viking 1	Index No.	Picture No.	Index No.	Picture No.
1	55A12	26	78A10	51
2	55A14	27	78A11	52
3	55A15	28	78A12	53
4	55A16	29	78A13	54
5	55A17	30	78A14	55
6	55A18	31	78A15	56
7	55A19	32	78A16	57
8	55A20	33	78A17	58
9	55A21	34	78A18	59
10	78A22	35	78A19	60
11	78A23	36	78A20	61
12	78A24	37	78A21	62
13	78A25	38	78A22	63
14	78A26	39	78A23	64
15	78A27	40	78A24	65
16	78A28	41	78A25	66
17	78A29	42	78A26	67
18	78A30	43	78A27	68
19	78A31	44	78A28	69
20	78A32	45	78A29	70
21	78A33	46	78A30	71
22	78A34	47	78A31	72
23	78A35	48	78A32	73
24	78A36	49	78A33	74
25	78A37	50	78A34	75



INDEX TO MARINER 9 PICTURES
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 51 among various versions of the same picture.

A-camera pictures	Index No.	DAS No.	Index No.	DAS No.
1	8874784	16	8370984	
2	8874785	17	8370985	
3	8874786	18	8370986	
4	8874787	19	8370987	
5	8874788	20	8370988	
6	8874789	21	8370989	
7	8874790	22	8370990	
8	8874791	23	8370991	
9	8874792	24	8370992	
10	8874793	25	8370993	
11	8874794	26	8370994	
12	8874795	27	8370995	
13	8874796	28	8370996	
14	8874797	29	8370997	

SHADED RELIEF MAP OF THE ARCADIA QUADRANGLE OF MARS
MC-3
M 5M 48/90 RN
1982



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

NOTE TO USERS
Users noting errors or omission are urged to indicate them on the map and forward it to U.S. Geological Survey, Building 4, Room 454, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

M(03)14
Ar22g
c.2

M(200)
1-1477
c.2
M(03)14
Ar22g
c.2



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