

DEPARTMENT OF THE INTERIOR
U.S. 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 Batson 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 3393.4 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 1:4,336,000 at lat 1° 30' and 1:4,290,000 at lat 14°. Standard parallels for the Lambert conformal conic projection are at lat 1° 35' 8" and 1° 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, 1973; Davies and Arthur, 1973) and the radiotracked position of the Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Airy-C (lat 5° 15' 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 photointerpretive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. Sites, shapes, and positions of features were taken from the base mosaic. In the first edition of the map, various computer enhancements of many Mariner 9 pictures besides 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 duplicate precisely 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, 1983) 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 CASIUS (identifying the CASIUS 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.

Provisional names: Astartus Colles, Cydnus Rupes and Pyramus Fossae, MC-6.
Abbreviation for Mars Chart 6.
M SM 48/270 RN: Abbreviation for Mars, 1:5,000,000 series; center of sheet, lat 48° N., long 270° W.; shaded relief map, (R), with nomenclature, (N).

REFERENCES
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