Prepared in Cooperation with the
JET PROPULSION LABORATORY, CALIFORNIA INSTITUTE OF TECHNOLOGY
FOR THE LANGLEY RESEARCH CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF MARS
1:1,000,000 TOPOGRAPHIC SERIES
UTOPIA REGION
M 1M 46/230 CM, 1977
I-1061

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

NOTES ON BASE

This is one photomosaic in a set of topographic map sheets covering areas of special interest on Mars at nominal scales of 1:1,000,000 and 1:250,000 (Batson 1973, 1976). The major source of map data was the Viking 1 spacecraft.

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 transverse Mercator projection is used for this sheet, with a scale of 1:1,000,000 at the central meridian. Longitudes increase to the west in accordance with the usage of the International Astronomical Union (IAU, 1971). Latitudes are areographic (de Vaucouleurs and others, 1973). The first meridian passes through the crater Airy-O (lat. 5.19° S) within the crater Airy.

CONTROL

Planimetric control was derived from the primary network (Davies, 1973). Two Mariner 9 frames (DAS 11976589 and DAS 11976729) were transformed and scaled to the transverse Mercator projection and fitted to the Mariner 9 control net. The placement of Viking 1 frames shown in the index was controlled by matching images on the Viking 1 and Mariner 9 frames.

IMAGE PROCESSING

Two Mariner 9 frames and fifty-nine Viking 2 frames were specially processed in the computer. Processing included artifact and noise removal, contrast enhancement and spatial filtration to remove camera shading and to enhance fine details in the image.

NOMENCLATURE

Names on this sheet are proposed, except for the following which have been approved by the International Astronomical Union (1974): Mie and Utopia Planitia. Some named craters are also designated by letters in parentheses; the first three letters identify the 1:5,000,000 Cebrenia (CEB) and Casius (CAS) sheets which cover this area. The final two letters identify the same crater on either the Cebrenia or Casius sheet where the letters refer to position on the sheet. Positions 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).

M 1M 46/230 CM: Abbreviation for Mars, 1:1,000,000 series; center of sheet, 46° N latitude, 230° longitude; controlled mosaic, CM.

SPACECRAFT LOCATION

The spacecraft location shown on the map (47.968° N, 225.71°W) was derived by Doppler tracking of spacecraft radio signals (Michael and others, 1976). The approximate precision of the location is ± .08 deg. latitude and ± .22 deg. longitude. The location has not yet been identified unambiguously by comparison of pictures taken from orbit with those taken by the lander.

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Michael, W. H., Jr., Mayo, A. P., Blackshear, W. T., Tolson, R. H., Kelly, G. M., Brenkle, J. T., Cain, D. L., Fjeldbo, G., Sweetnam, D. N., Goldstein, R. B., MacNeil, T. E., Reasenberg, R. D., Shapiro, I. I., Boak, T. I. S., III, Grossi, M. D., and Pang, C. H., 1976, Mars Dynamic, atmospheric and surface properties: determinations from Viking tracking data: Science, v. 194, p. 1337-1338.

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Interior—Geological Survey, Reston, Va.—1977—G77057

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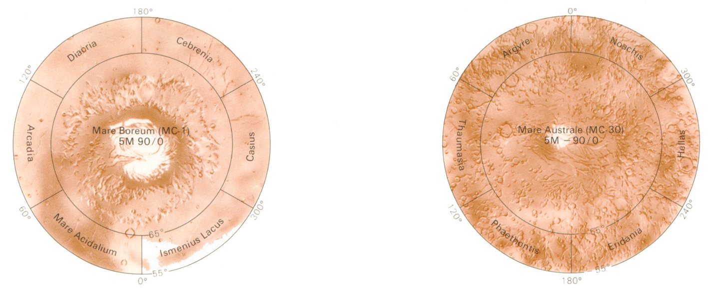
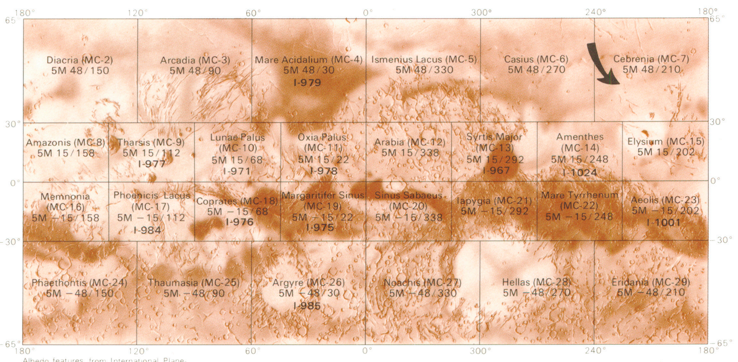
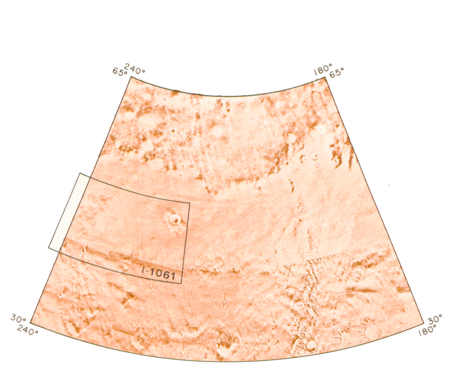




Albedo features from International Planetary Patrol photographs, Lowell Observatory, Flagstaff, Ariz.

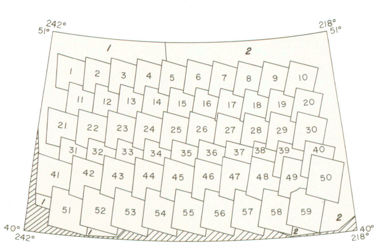
QUADRANGLE LOCATION
Arrow indicates map area
Number preceded by I refers to published topographic map



MAP OF CEBRENIA QUADRANGLE SHOWING LOCATION OF VIKING 2 LANDING SITE

SCALE 1:1 000 000 AT 230° LONGITUDE
TRANSVERSE MERCATOR PROJECTION

KILOMETERS



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3	9B05	23	9B25	43	9B45		
4	9B07	24	9B27	44	9B47		
5	9B09	25	9B29	45	9B49		
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INDEX TO VIKING 1 AND MARINER 9 PICTURES USED ON MOSAIC
Numbers shown in italics refer to Mariner 9 pictures used to provide the base control to which the Viking 2 pictures were mosaicked. Mariner 9 images were not used in the cross-hatched areas.

CONTROLLED MOSAIC OF THE UTOPIA PLANITIA REGION OF MARS
(VIKING 2 LANDING SITE)
M 1M 46/230 CM
1977

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