DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

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

ATLAS OF MARS
1:5,000,000 TOPOGRAPHIC SERIES
EASTERN PART OF THE CHRYSE PLANITIA REGION
M 1M 22/35 CMC, 1977
I-1069

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. This is not the height datum defined below under the heading "Contours."

PROJECTION

The transverse Mercator projection is used for this sheet, with a scale of 1:1,000,000. Longitude increases 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). A set of nine Mariner 9 pictures was tied to the primary net. The positions of Viking 1 pictures were controlled by the Mariner 9 images. No simple statement is possible for the precision, but local consistency is about 2 km.

IMAGE PROCESSING

Viking 1 frames were specially processed in the computer and mosaicked. Processing included artifact and noise removal, contrast enhancement, and spatial filtration to remove camera shading and to enhance fine details in the image. Processing of all frames except those in the northwest corner was done by the Mission Test and Video System (MTVS) at the Jet Propulsion Laboratory (JPL).

CONTOURS

Since Mars has no seas and hence no sea level, the datum (the 0 km contour line) for altitudes is defined by a gravity field described by spherical harmonics of fourth order and fourth degree (Jordan and Lorell, 1973) combined with a 6.1 millibar atmospheric pressure surface derived from radio-occultation data (Kliore and others, 1973; Christensen, 1975; Wu, 1975).

The contour lines were compiled by stereophotogrammetric methods from pairs of Viking 1 pictures taken on revolution 27. Special stereoplotter methods were applied to this extremely narrow-angle (1°) photography (Wu, 1975). Parameters for setting stereomodels in analytical plotters were derived from analytical triangulations performed with the U.S. Geological Survey GIANT computer program, the prototype of MUSAT, (Elassal, and others, 1970). This blends photogrammetric coordinate measures with position and orientation values taken from the Supplementary Experiment Data Record (SEDR) with appropriate weights for these disparate data.

NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (1974; 1977). Named craters bearing double letters in parentheses are designated by the same letters on the 1:5,000,000 Oxia Palus sheet that covers this area. These double letter designations refer to position on the 1:5,000,000 sheet 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 letter. The prefix OXI (identifying the Oxia Palus sheet) is part of the complete designation but, for brevity, is not shown on most craters.

M 1M 22/35 CMC: Abbreviation for Mars, 1:1,000,000 series; center of sheet, 22° N. lat 35° long; controlled mosaic, CM, with contours, C.

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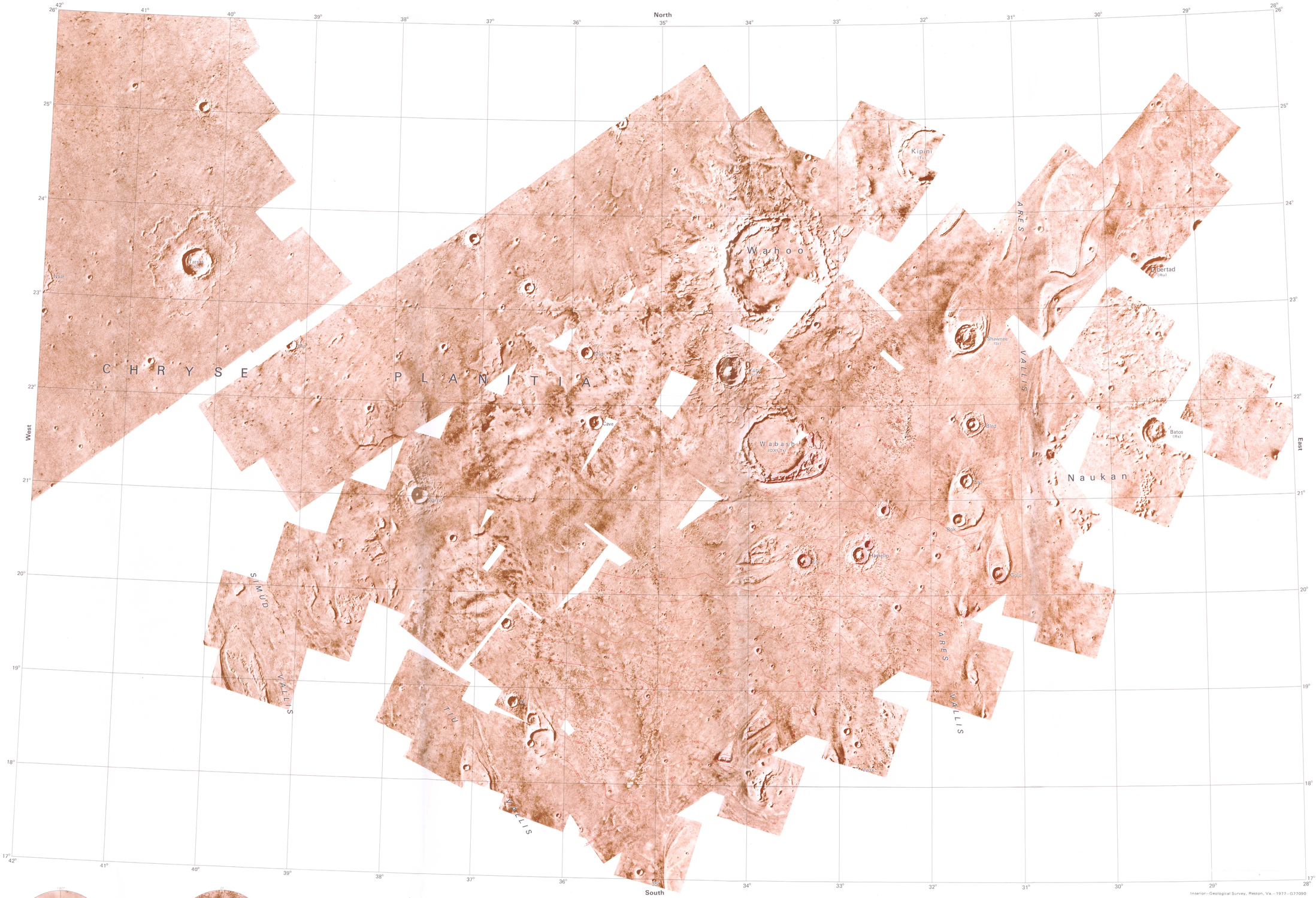
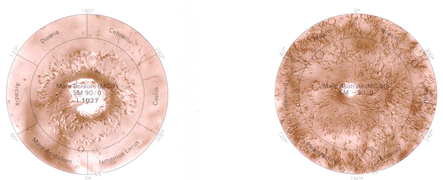
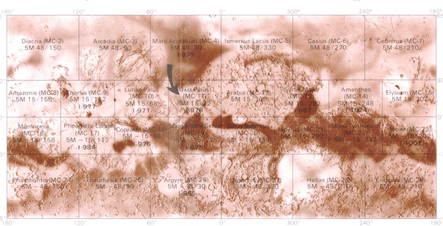






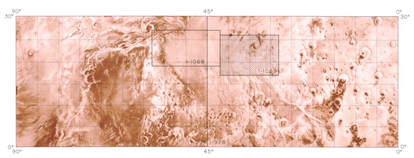
QUADRANGLE LOCATION
Arrow indicates map area
Number preceded by I refers to published topographic map

SCALE 1:1 000 000 AT 33° LONGITUDE
TRANSVERSE MERCATOR PROJECTION

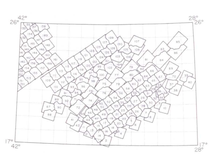
KILOMETERS
10 0 10 20 30 40 50 60 70 80 90 100 200 300
Longitude scale at Equator

CONTOUR INTERVAL 200 METERS

NOTE TO USERS
Users noting errors or omissions are urged to indicate them on the map and to forward the map to Astrogeologic Studies, Geologic Division, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.



MAP OF LUNAE PALUS AND OXIA PALUS QUADRANGLES
SHOWING LOCATION OF THIS MAP



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