

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 (distortion 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 1:250,000. Longitudes increase to the west in accordance with the usage of the International Astronomical Union (IAU, 1973). 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 (Davis, 1973). Secondary control was first derived using a set of nine Mariner 9 pictures and the common points used to control a tertiary net depending on 23 Viking pictures by methods described by Davis and Arthur (1973). The tertiary points have a local precision of ± 100 m and an absolute precision of ± 2 km.

IMAGE PROCESSING
Twenty-four Viking 1 frames were specially processed and mosaicked in the computer. Processing included artifact and noise removal, contrast enhancement and spatial filtering to remove camera shading and to enhance fine details in the image.

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 0.1 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.

NOMENCLATURE
The following names are approved by the International Astronomical Union (1974; 1977): Chryse Planitia, Xanthe Dorsa, Lexington and Yorktown; other names are not acknowledged by the IAU. The named crater bearing a double letter in parentheses is designated by the same letters on the 1:5,000,000 Lunae Palus sheet which covers this area.

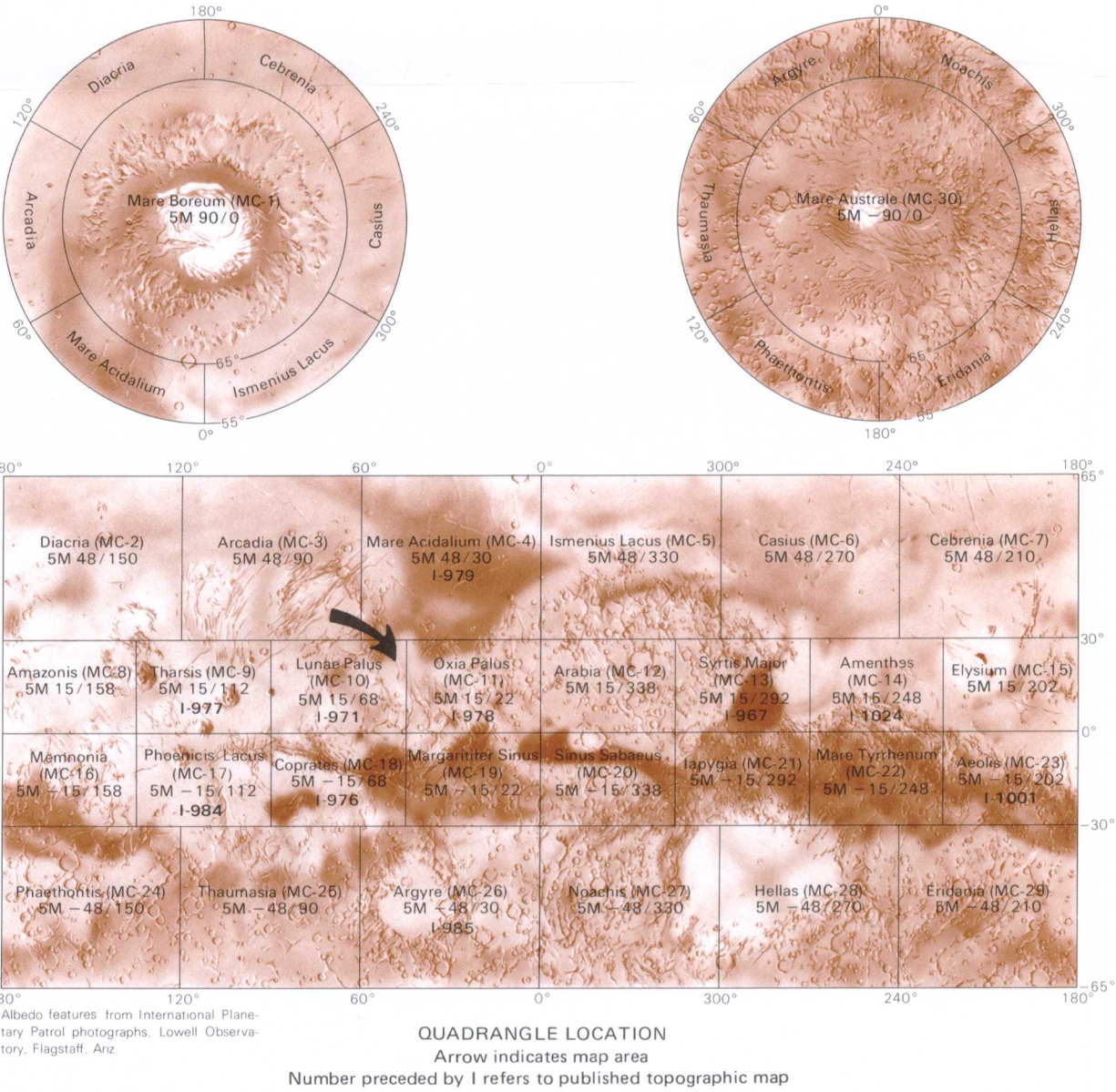
The Viking mission was planned, in part, to honor the bicentennial celebration of the United States of America (1776-1976) and the names chosen for the two Viking maps at a scale of 1:250,000 honor this event. Names on the first Viking landing site map commemorate the thirteen American colonies and the ports and countries that traded with them and from which expeditions originated in 1776. Names on the second Viking landing site map honor the launch facilities, tracking stations, and mission control centers concerned with the exploration of space in 1976, including the Viking mission.

NAME	COUNTRY
Albany	USA, New York
Amsterdam	Holland
Annapolis	USA, Md.
Bordeaux	France
Bremenhaven	Germany
Bridgetown	Barbados
Bristol	United Kingdom
Cádiz	Spain
Charleston	USA, S.C.
Cólon	Panama
Funchal	Madeira Islands
Kingston	Jamaica
La Paz	Mexico
Lexington	USA, Mass.
Lisboa	Portugal
New Bern	USA, N.C.
New Haven	USA, Conn.
Newport	USA, R.I.
Ohkotsk	USSR (Russia)
Philadelphia	USA, Pa.
Port-au-Prince	Haiti (Hispaniola)
Portsmouth	USA, N.H.
Princeton	USA, N.J.
Savannah	USA, Ga.
San Juan	Puerto Rico
Santa Cruz	Canary Islands
Wilmington	USA, Del.
Yorktown	USA, Va.

M 250K 22/48 CMC
Abbreviation for Mars, 1:250,000 series; center of sheet, 22° N latitude, 48° longitude; controlled mosaic, CM, with contours, C.

SPACECRAFT LOCATION
The spacecraft location shown on the map (22.483° N, 47.94° W) was derived by Doppler tracking of spacecraft radio signals (Michael and others, 1976). The approximate precision of the location is $\pm .08$ deg. latitude and $\pm .22$ deg. longitude. The location has not yet been identified unambiguously by comparison of pictures taken from orbit with those taken by the lander.

- REFERENCES**
Batson, R. M., 1973, Cartographic products from the Mariner 9 mission. *Jour. Geophys. Research*, v. 78, no. 20, p. 4424-4435.
—, 1976, Cartography of Mars, 1975: The American Cartographer, v. 3, no. 1, p. 57-63.
Christensen, E. J., 1975, Martian topography derived from occultation, radar, spectral, and optical measurements. *Jour. Geophys. Research*, v. 80, no. 20, p. 2909-2913.
Davis, M. E., 1973, Mariner 9 Primary control net. *Photogram. Eng.*, v. 39, no. 12, p. 1297-1302.
Davis, M. E., and Arthur, D. W. G., 1973, Martian surface coordinates. *Jour. Geophys. Research*, v. 78, no. 20, p. 4355-4394.
International Astronomical Union, Commission 16, 1971, Physical study of planets and satellites, in *Proc. 14th General Assembly*, 1970. Internat. Astron. Union Trans., v. XIVB, p. 128-137.
—, 1974, Physical study of planets and satellites, in *Proc. 14th General Assembly*, 1973. Internat. Astron. Union Trans., v. XIVB, p. 105-108.
—, 1977, Physical study of planets and satellites, in *Proc. 16 General Assembly*, 1976. Internat. Astron. Union Trans. (in press).
Jordan, J. F., and Lorell, Jack, 1973, Mariner 9, an instrument of dynamical science. Presented at AAS/AIAA Astrodynamics Conf., Vail, Colo., July 16-18, 1973.
Kliore, A. J., Fjeldbo, Gunnar, Seidel, B. L., Sykes, M. J., and Vozenyn, P. M., 1973, S-band radio occultation measurements of the atmosphere and topography of Mars with Mariner 9: Extended mission coverage of polar and intermediate latitudes. *Jour. Geophys. Research*, v. 78, no. 20, p. 4331-4351.
Michael, W. H., Jr., Mayo, A. P., Blackshear, W. T., Tolson, R. H., Kelly, G. M., Beakle, T. T., Cain, D. L., Fjeldbo, G., Sweetnam, D. N., Goldstein, R. B., MacNeil, T. E., Rosenberg, R. D., Shapiro, J. L., Isak, T. J., 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.
de Vaucouleurs, G. D., Davis, M. E., and Starns, F. M., Jr., 1973, The Mariner 9 areographic coordinate system. *Jour. Geophys. Research*, v. 78, no. 20, p. 4395-4404.
Wu, S. S. C., 1975, Topographic mapping of Mars, U.S. Geol. Survey Interagency Rept. 63 (in press).



CONTROLLED MOSAIC OF THE YORKTOWN REGION OF MARS
(VIKING 1 LANDING SITE)
M 250 K 22/48 CMC
1977

