

NOTES ON BASE

This map is one in a series covering the entire surface of Mars at a nominal scale of 1:5,000,000. The series was originally compiled from Mariner 9 data (Bateson and others, 1979). The original shaded relief base was revised and augmented with image data from Viking Orbiters, but feature positions were not shifted to fit controls derived from Viking.

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 3,393.4 km and a polar radius of 3,375.7 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 30° and 1:4,306,000 at lat 60°. Standard parallels for the Lambert Conformal Conic projection are at lat 33.5° and 59.2°. Longitude increases to the west in accordance with astronomical convention for Mars. Latitude is planetographic.

CONTROL

Planimetric control of the shaded relief is provided by photogrammetric triangulation using Mariner 9 images (Davies, 1973; Davies and Arthur, 1978) and the radio-tracked position of the Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Any-O (lat 5.19° S, long 0°), within the crater Any.

Primary controls used in the network include the Viking Orbiter Secondary Experiment Data Record, radio-occultation measurements from both Mariner 9 and Viking Missions (Lowell and others, 1972; Klose and others, 1973; Landi and others, 1979), Earth-based radar observations (Pettingill and others, 1971; Downs and others, 1975), and the Mars primary control network of the Rand Corporation (Davies and others, 1978).

MAPPING TECHNIQUE

Shaded relief was portrayed by photointerpretive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. The original rendition of feature positions, sizes, and shapes was taken from a controlled base mosaic of Mariner 9 images. Various computer enhancements of many Mariner 9 and Viking Orbiter images besides those in the base mosaic were examined in an attempt to portray the surface as accurately as possible.

Initial shaded relief analysis and representation based on Viking Orbiter data 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.

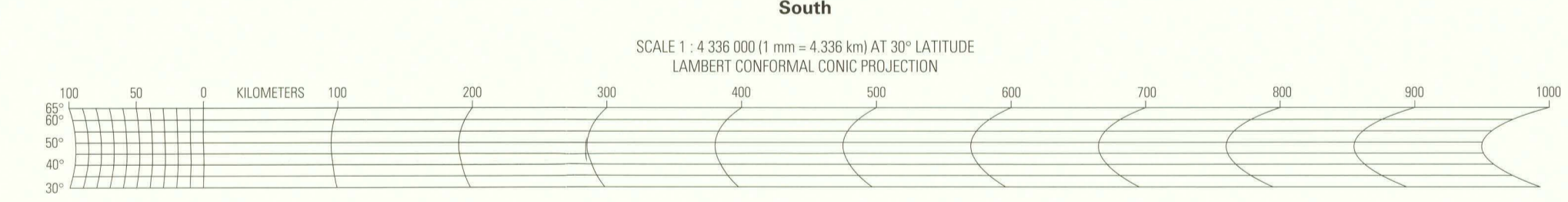
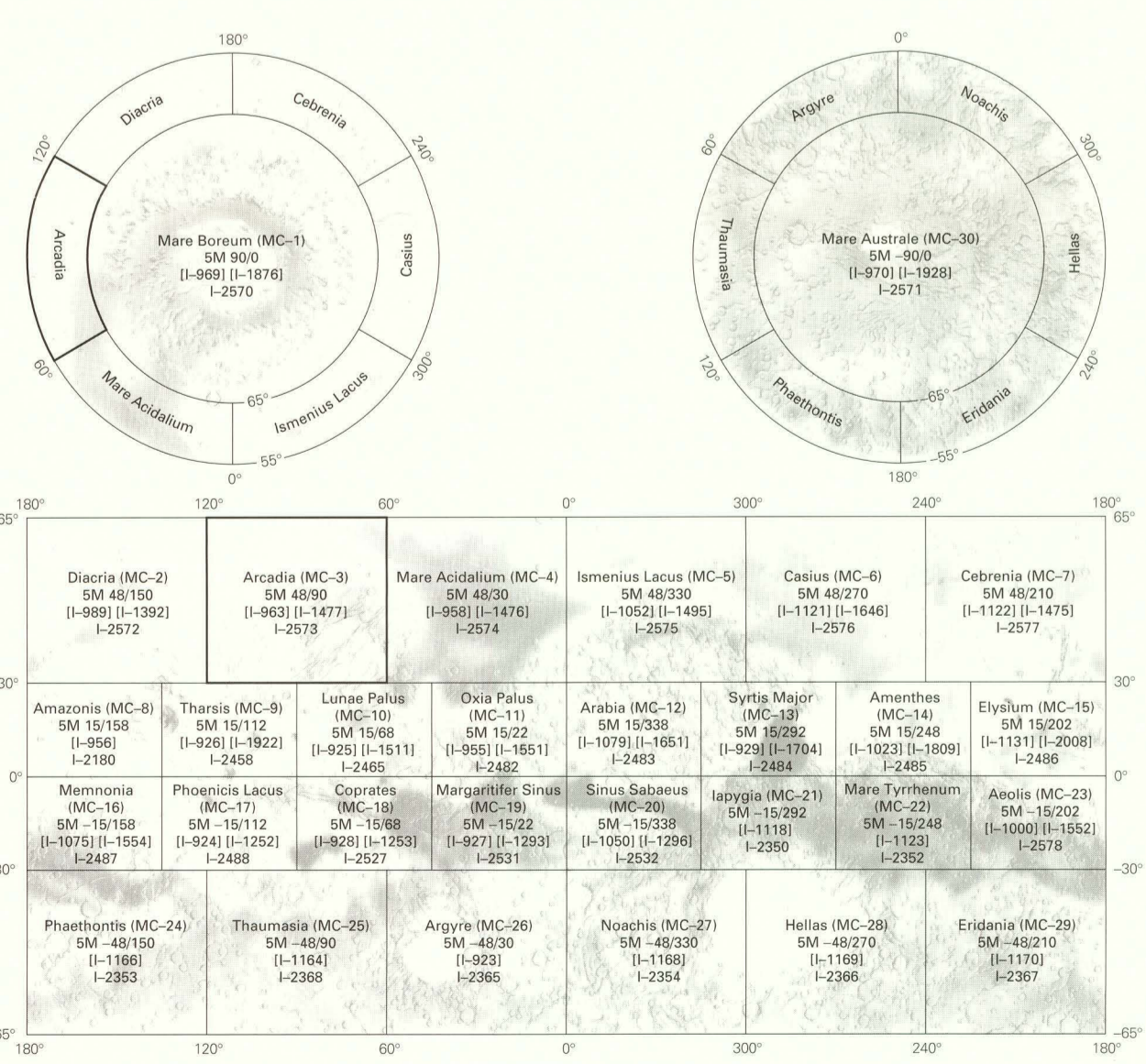
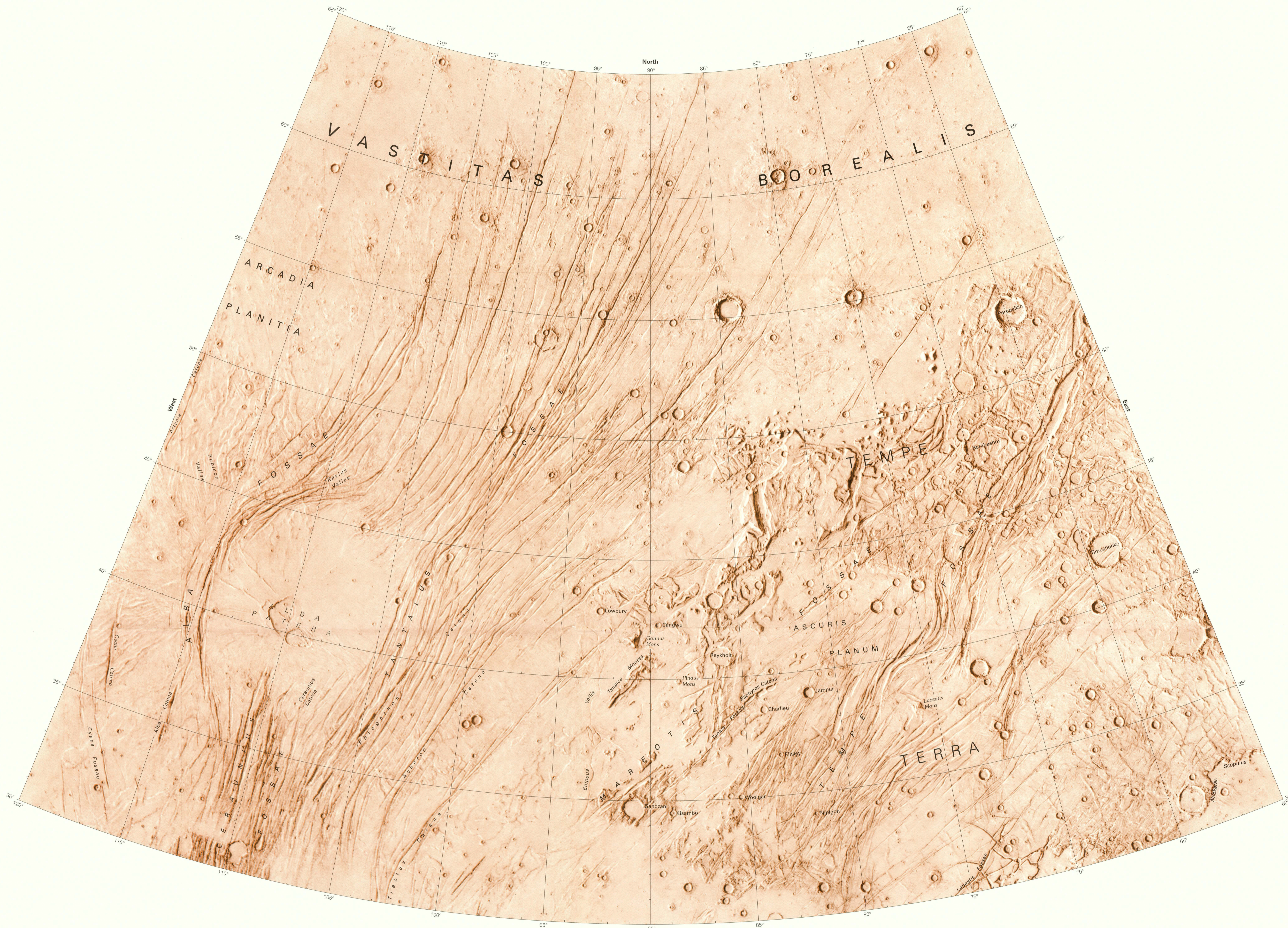
NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (IAU), 1974, 1977, 1980, 1983, 1986, 1992, 1996.

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°; shaded relief map (R) with nomenclature (N).

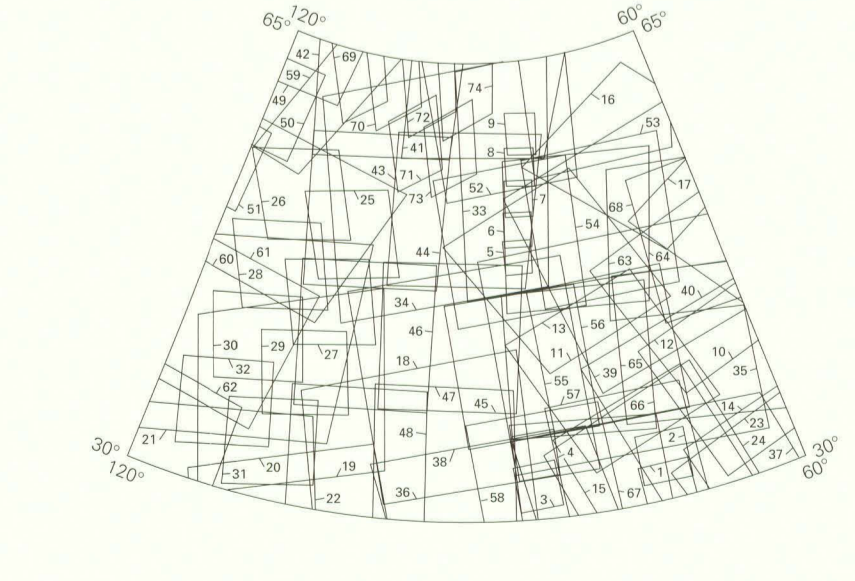
REFERENCES

Bateson, 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 Special Publication 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. 4355-4364.
Davies, M.E., Katayama, F.Y., and Roth, J.A., 1978, Control net of Mars, February 1987, The Rand Corporation, R-2309-NASA, 21 p.
Downs, G.S., Reichley, P.E., and Green, R.R., 1975, Radar measurements of martian topography and surface properties, Icarus, v. 26, no. 3, p. 273-312.
Inge, J.L., and Bridges, P.M., 1976, Applied photointerpretation 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 Proceedings of the 15th General Assembly, Sydney, 1973, Transactions of the International Astronomical Union, v. 15B, p. 105-108, 207-221.
—, 1977, Working Group for Planetary System Nomenclature, in Proceedings of the 16th General Assembly, Grenoble, 1976, Transactions of the International Astronomical Union, v. 16B, p. 321-325, 331-336, 355-362.
—, 1980, Working Group for Planetary System Nomenclature, in Proceedings of the 17th General Assembly, Montreal, 1979, Transactions of the International Astronomical Union, v. 17B, p. 285-304.
—, 1983, Working Group for Planetary System Nomenclature, in Proceedings of the 18th General Assembly, Patras, 1982, Transactions of the International Astronomical Union, v. 18B, p. 331-346.
—, 1986, Working Group for Planetary System Nomenclature, in Proceedings of the 19th General Assembly, New Delhi, 1985, Transactions of the International Astronomical Union, v. 19B, p. 339-353.
—, 1992, Working Group for Planetary System Nomenclature, in Proceedings of the 21st General Assembly, Buenos Aires, 1991, Transactions of the International Astronomical Union, v. 21B, p. 357-363.
—, 1996, Working Group for Planetary System Nomenclature, in Proceedings of the 22th General Assembly, The Hague, 1994, Transactions of the International Astronomical Union, v. 22B, p. 225-231.
Klose, A.J., Fajolis, G., Carr, S., Sidel, B.L., Sykes, M.J., and Wozniak, 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, Journal of Geophysical Research, v. 78, no. 20, p. 4331-4351.
Landi, G.F., Hatz, H.B., Sweetnam, D.N., Shippors, Z., Beukle, J.P., Hartell, G.V., and Spear, R.T., 1979, Viking radio occultation measurements of the atmosphere and topography of Mars, Journal of Geophysical Research, v. 84, no. B14, p. 8443-8456.
Lorell, Jack, Born, G.H., Jordan, J.F., Laing, P.A., Martin, W.L., Sogren, W.J., Shapiro, I.I., Rosenber, R.D., and Slater, G.L., 1972, Mariner 9 celestial mechanics experiment—Gravity field and pole direction of Mars, Science, v. 175, no. 4019, p. 317-320.
Pettingill, G.H., Rogers, A.E.E., and Shapiro, I.I., 1971, Martian craters and a scarp as seen by radar, Science, v. 174, no. 4016, p. 1321-1324.



12,000,000 SCALE
CONTROLLED PHOTOMOSAICS

- 1-Series: Quadrangle
- 1-1305 MC-3 NW
- 1-1303 MC-3 NE
- 1-1307 MC-3 SE
- 1-1304 MC-3 SW
- 1-1302 MC-3 E
- 1-1309 MC-4 SW

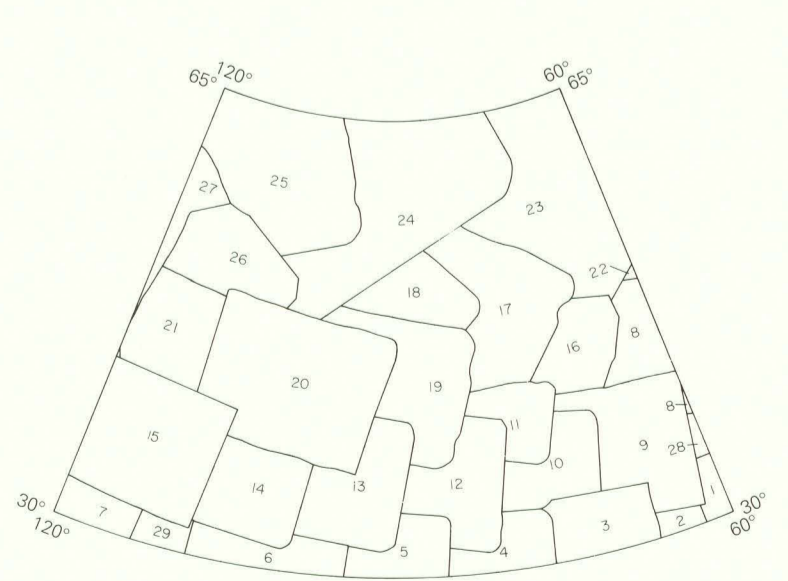


VIKING 1

Index No.	Picture No.	Index No.	Picture No.	Index No.	Picture No.
1	505A12	26	702A10	51	815A49
2	505A14	27	702A11	52	815A50
3	505A15	28	702A12	53	815A51
4	505A20	29	702A13	54	815A52
5	505A26	30	702A14	55	815A53
6	505A28	31	702A15	56	815A54
7	505A30	32	702A16	57	815A55
8	505A32	33	800A01	58	815A56
9	505A34	34	800A02	59	815A57
10	717A01	35	800A03	60	815A58
11	717A02	36	800A04	61	815A59
12	717A03	37	800A05	62	815A60
13	717A04	38	800A06	63	854A11
14	717A05	39	811A01	64	854A12
15	717A06	40	811A02	65	854A13
16	750A01	41	815A01	66	854A14
17	750A14	42	815A02	67	854A15
18	750A15	43	815A03	68	854A16
19	750A17	44	815A04	69	854A17
20	750A18	45	815A05	70	854A18
21	750A20	46	815A06	71	854A19
22	750A21	47	815A07	72	854A20
23	750A22	48	815A08	73	854A21
24	750A23	49	815A09	74	854A22
25	750A24	50	815A10		

INDEX OF VIKING SOURCES
This shaded relief map has been revised by utilizing 1:2,000,000-scale controlled photomosaics 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 Flight Center, Greenbelt, MD 20771.

Shaded relief revised in May 1991 on behalf of the Planetary Geology Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration.
This map corresponds to I-1427.
Edited by Darick D. Hirsch, cartography by Darlene A. Casabier.
Manuscript approved for publication April 11, 1995.



A-camera pictures

Index No.	DAS No.	Index No.	DAS No.
1	801404	16	801014
2	802324	17	812521
3	807304	18	110504
4	808804	19	801324
5	808824	20	844204
6	851484	21	837134
7	837004	22	116201
8	837144	23	116202
9	872104	24	116203
10	880604	25	116214
11	887154	26	116240
12	887014	27	116074
13	851484	28	802264
14	844204	29	844204
15	837094		

INDEX OF 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. Useful coverage is not available in the crosshatched areas. The DAS number may vary slightly (usually by 5) among different versions of the same picture.

NOTE TO USERS
Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 454, 2220 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

REVISED SHADED RELIEF MAP OF THE ARCADIA QUADRANGLE (MC-3) OF MARS

1999

For sale by U.S. Geological Survey, Information Services, Box 25268, Federal Center, Denver, CO 80225

