

NOTES ON BASE
This map is one in a series covering the entire surface of Mars at a normal scale of 1:5,000,000. The series was originally compiled from Mariner 9 data (Batson and others, 1979). The original shaded relief base was revised and augmented with image data from Viking Orbiter, 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 23° and 1:4,306,000 at lat 165°. Standard parallels for the Lambert Conformal Conic projection are at lat ±35.8° and ±59.2°. Longitude increases to the west in accordance with astronomical convention for Mars. Latitude is planigraphic.

CONTROL
Planimetric control of the shaded relief is provided by photogrammetric triangulation using Mariner 9 images (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Any-O 5d 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; Klore and others, 1973; Lindal and others, 1971), Earth-based radar observations (Pettengill 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 Ige and Bridges (1976). Uniform sun illumination from the west was used throughout. The original rendition of feature positions, sizes, and shape 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.

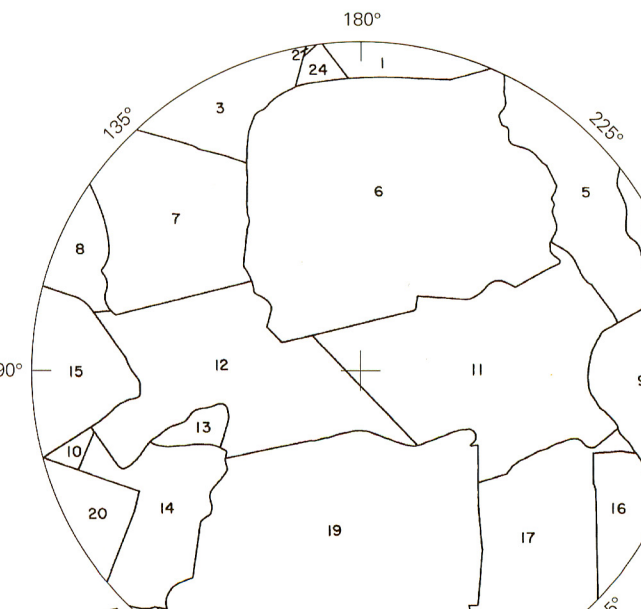
Initial shaded relief analysis and representation based on Viking Orbiter data were made by Patricia M. Bridges; revisions were made by Barbara J. Hall.

COLOR
No attempt was made on the map to duplicate precisely the color of the martian surface, although the color used may approximate it.

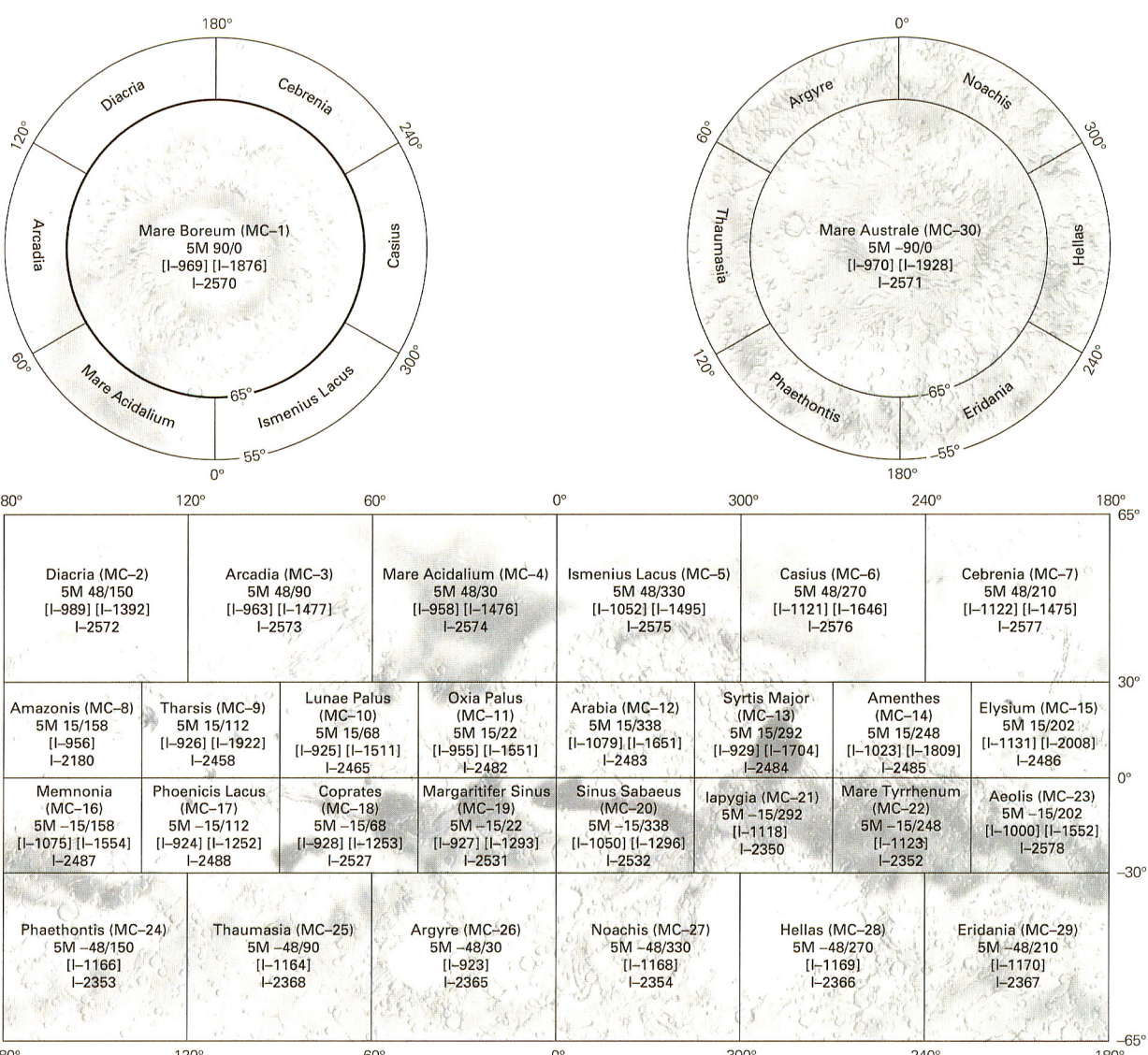
NOMENCLATURE
Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1977, 1986, 1990, 1992).

MC-1: Abbreviation for Mars Chart 1.
M 5M 90/0 RN: Abbreviation for Mars 1:5,000,000 series; center of sheet, lat 90° N, long 0°; shaded relief map (R) with nomenclature (N).

- REFERENCES**
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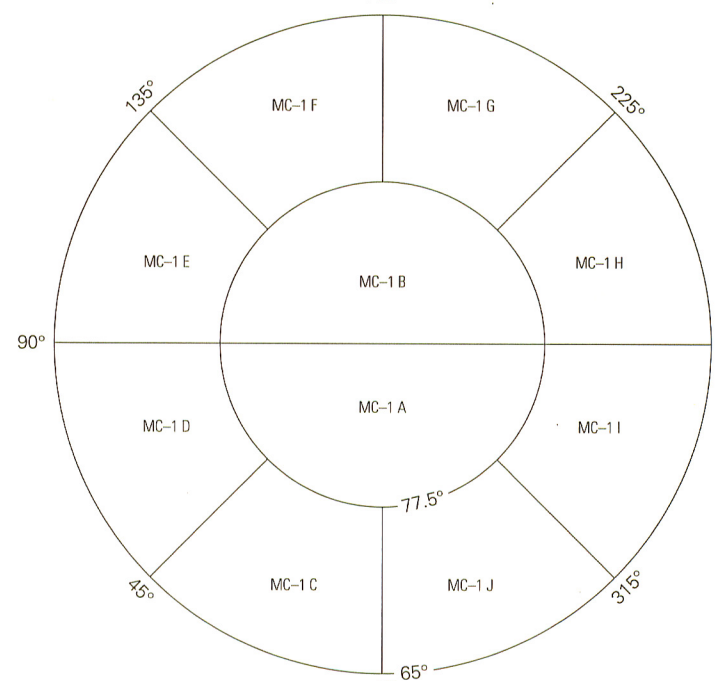
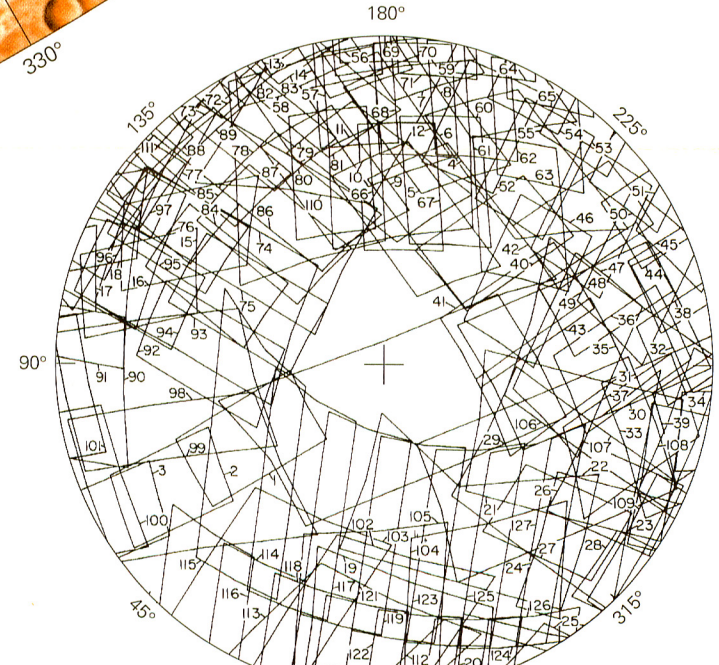
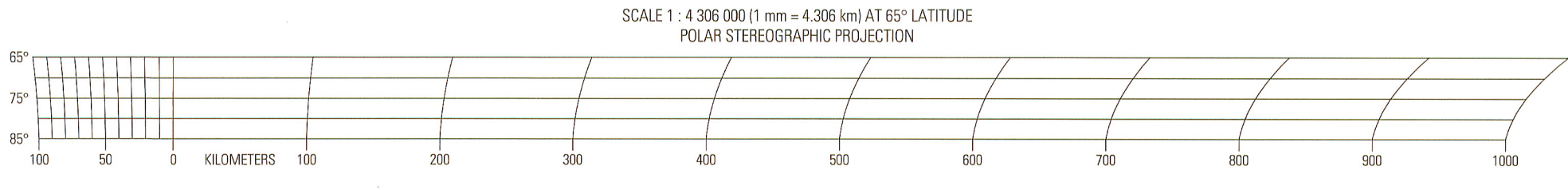
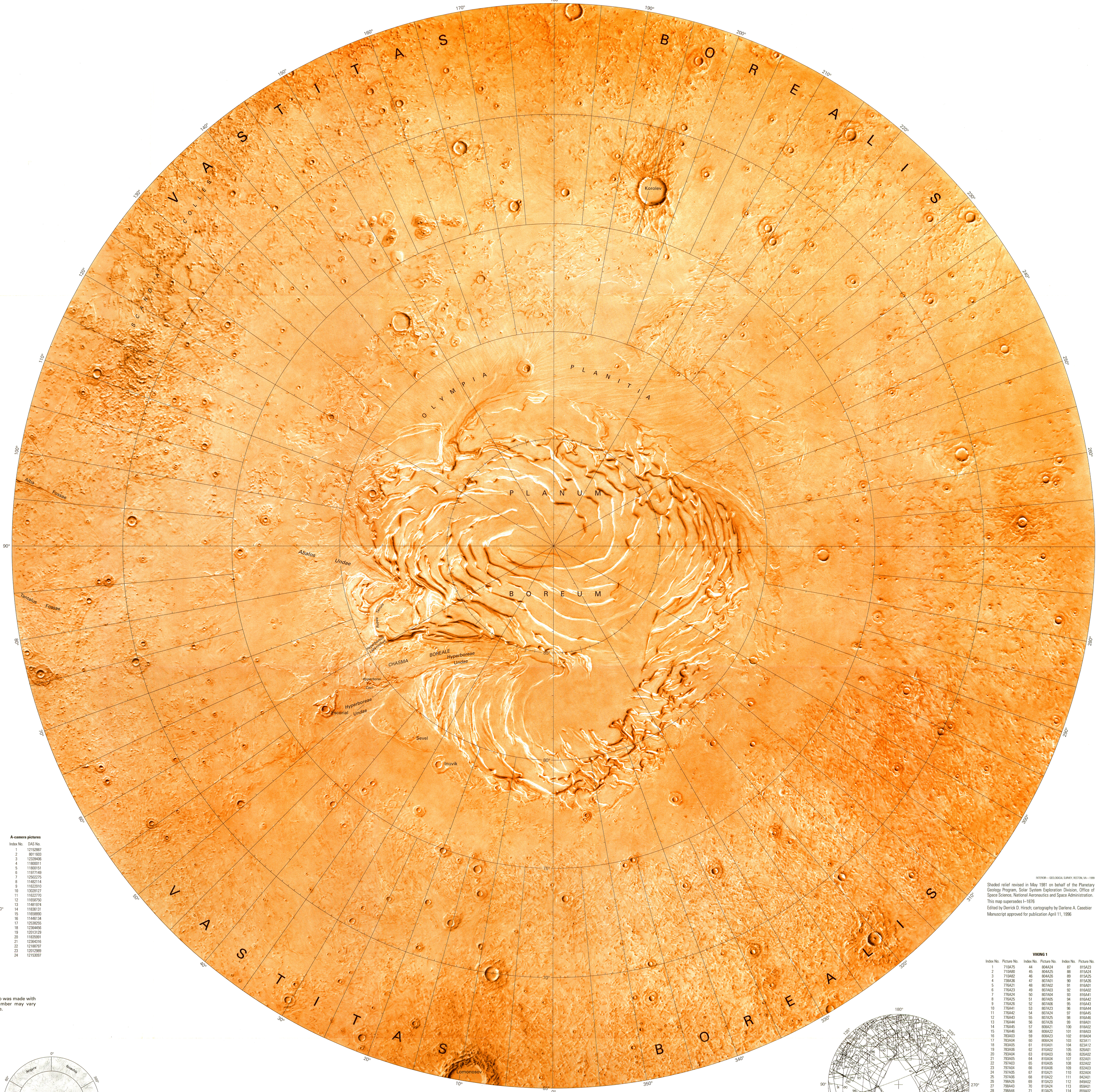


The mosaic used to control the positioning of features on this map was made with the Mariner 9 A-camera pictures outlined above. The DAS number may vary slightly (usually by 5) among different versions of the same picture.



Number preceded by 1 refers to published shaded relief map. (Number in brackets refers to earlier map superseded by revised version.)

NOTE TO USERS
Users noting errors or omissions are urged to indicate them on the map and forward it to U.S. Geological Survey, Building Room 664, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.



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 1987 on behalf of the Planetary Geology Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration. This map supersedes I-2570. Edited by Derrick D. Hinds; cartography by Carline A. Casabier. Manuscript approved for publication April 11, 1996.

VIKING 1			
Index No.	Picture No.	Index No.	Picture No.
1	710A75	44	80A241
2	710A80	45	80A245
3	710A85	46	80A248
4	710A90	47	80A251
5	710A95	48	80A254
6	710A100	49	80A257
7	710A105	50	80A260
8	710A110	51	80A263
9	710A115	52	80A266
10	710A120	53	80A269
11	710A125	54	80A272
12	710A130	55	80A275
13	710A135	56	80A278
14	710A140	57	80A281
15	710A145	58	80A284
16	710A150	59	80A287
17	710A155	60	80A290
18	710A160	61	80A293
19	710A165	62	80A296
20	710A170	63	80A299
21	710A175	64	80A302
22	710A180	65	80A305
23	710A185	66	80A308
24	710A190	67	80A311
25	710A195	68	80A314
26	710A200	69	80A317
27	710A205	70	80A320
28	710A210	71	80A323
29	710A215	72	80A326
30	710A220	73	80A329
31	710A225	74	80A332
32	710A230	75	80A335
33	710A235	76	80A338
34	710A240	77	80A341
35	710A245	78	80A344
36	710A250	79	80A347
37	710A255	80	80A350
38	710A260	81	80A353
39	710A265	82	80A356
40	710A270	83	80A359
41	710A275	84	80A362
42	710A280	85	80A365
43	710A285	86	80A368

1:2,000,000 SCALE CONTROLLED PHOTOMOSAICS			
Index No.	Picture No.	Index No.	Picture No.
1	710A75	44	80A241
2	710A80	45	80A245
3	710A85	46	80A248
4	710A90	47	80A251
5	710A95	48	80A254
6	710A100	49	80A257
7	710A105	50	80A260
8	710A110	51	80A263
9	710A115	52	80A266
10	710A120	53	80A269
11	710A125	54	80A272
12	710A130	55	80A275
13	710A135	56	80A278
14	710A140	57	80A281
15	710A145	58	80A284
16	710A150	59	80A287
17	710A155	60	80A290
18	710A160	61	80A293
19	710A165	62	80A296
20	710A170	63	80A299
21	710A175	64	80A302
22	710A180	65	80A305
23	710A185	66	80A308
24	710A190	67	80A311
25	710A195	68	80A314
26	710A200	69	80A317
27	710A205	70	80A320
28	710A210	71	80A323
29	710A215	72	80A326
30	710A220	73	80A329
31	710A225	74	80A332
32	710A230	75	80A335
33	710A235	76	80A338
34	710A240	77	80A341
35	710A245	78	80A344
36	710A250	79	80A347
37	710A255	80	80A350
38	710A260	81	80A353
39	710A265	82	80A356
40	710A270	83	80A359
41	710A275	84	80A362
42	710A280	85	80A365
43	710A285	86	80A368