

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NOTES ON BASE
This is one map in a series of topographic map sheets covering the entire surface of Mars at nominal scale of 1:25,000,000 and 1:5,000,000 (Barton, 1973; 1976). The major source of map data was the Mariner 9 television experiment (Mansky and others, 1976).

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 3393.8 km and a polar radius of 3375.7 km.

PROJECTION
The Lambert conformal conic projection is used for this sheet with standard parallels at 35°S and 59°S. A scale of 1:4,336,000 at lat 30° was chosen to match the scale at lat 20° of the adjacent Mercator projection. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are astrographic (de Vasconcelos and others, 1973).

CONTROL
Planimetric control is provided by photogrammetric triangulation using Mariner 9 pictures (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the spacecraft. The first meridian passes through the crater Airy-0 (lat 51°S) within the crater Airy. No simple statement is possible for the precision, but local consistency is about 10 km.

MAPPING TECHNIQUE
A series of mosaics of Lambert conformal conic projections of Mariner 9 pictures was assembled at 1:5,000,000.
Shaded relief was copied from the mosaics and portrayed with uniform illumination with the sun to the west, using airbrush techniques described by Inge (1972) and Inge and Bridges (1976). To improve portrayal, various computer enhancements of many pictures besides those in the base mosaic were used. Computer enhancement of Mariner 9 pictures is described by Leontovich and others, 1973, and Green and others, 1975. Viking orbiter pictures were also examined and used where they significantly clarified Mariner 9 image data. No attempt was made to portray all information in the Viking pictures, however.

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

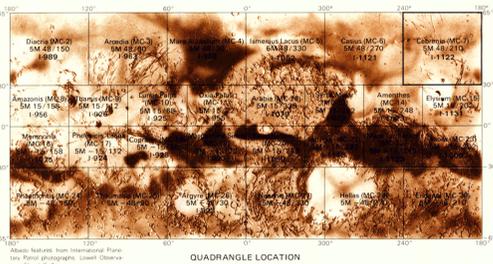
NOMENCLATURE
All names on this sheet are approved by the International Astronomical Union (IAU, 1978), except Had Vallis, which is provisional. Double and triple letter designations for craters refer to position on the map and are derived from a grid based on equidistant meridians and parallels; the alphabet (I and O omitted) runs in the direction of increasing longitude (O) and latitude (N). The complete designation of a crater is the name of the quadrangle followed by a double or triple letter. The prefix CEB (identifying the Cebrenia quadrangle) is part of the complete designation but, for brevity, is not shown on most craters. Some craters have commemorative names; letter designations for these craters are shown in parentheses. Where craters lie exactly on the boundary of two maps, their letters are derived from the eastern or southern map.

ABBREVIATION FOR MAPS
M 5M 48/210 R: Abbreviation for Mars 1:5,000,000 series; center of sheet, lat 48°N, long 210°W, shaded relief map, R.

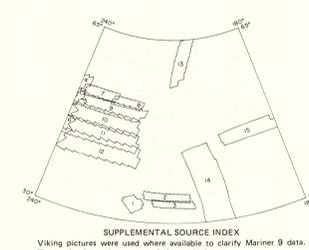
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W-13,709



QUADRANGLE LOCATION
Number preceded by 1 refers to published shaded relief map



SUPPLEMENTAL SOURCE INDEX
Viking pictures were used where available to clarify Mariner 9 data. The outline for each sequence of pictures is shown.

Viking 1				Viking 2			
Index No.	Picture No.						
1	122441	2	88A21	4	21817	7	21864
2	122442	3	88A22	5	21818	8	21865
3	122443	4	88A23	6	21819	9	21866
4	122444	5	88A24	7	21820	10	21867
5	122445	6	88A25	8	21821	11	21868
6	122446	7	88A26	9	21822	12	21869
7	122447	8	88A27	10	21823	13	21870
8	122448	9	88A28	11	21824	14	21871
9	122449	10	88A29	12	21825	15	21872
10	122450	11	88A30	13	21826	16	21873
11	122451	12	88A31	14	21827	17	21874
12	122452	13	88A32	15	21828	18	21875
13	122453	14	88A33	16	21829	19	21876
14	122454	15	88A34	17	21830	20	21877
15	122455	16	88A35	18	21831	21	21878
16	122456	17	88A36	19	21832	22	21879
17	122457	18	88A37	20	21833	23	21880
18	122458	19	88A38	21	21834	24	21881
19	122459	20	88A39	22	21835	25	21882
20	122460	21	88A40	23	21836	26	21883
21	122461	22	88A41	24	21837	27	21884
22	122462	23	88A42	25	21838	28	21885
23	122463	24	88A43	26	21839	29	21886
24	122464	25	88A44	27	21840	30	21887
25	122465	26	88A45	28	21841	31	21888
26	122466	27	88A46	29	21842	32	21889
27	122467	28	88A47	30	21843	33	21890
28	122468	29	88A48	31	21844	34	21891
29	122469	30	88A49	32	21845	35	21892
30	122470	31	88A50	33	21846	36	21893
31	122471	32	88A51	34	21847	37	21894
32	122472	33	88A52	35	21848	38	21895
33	122473	34	88A53	36	21849	39	21896
34	122474	35	88A54	37	21850	40	21897
35	122475	36	88A55	38	21851	41	21898
36	122476	37	88A56	39	21852	42	21899
37	122477	38	88A57	40	21853	43	21900
38	122478	39	88A58	41	21854	44	21901
39	122479	40	88A59	42	21855	45	21902
40	122480	41	88A60	43	21856	46	21903
41	122481	42	88A61	44	21857	47	21904
42	122482	43	88A62	45	21858	48	21905
43	122483	44	88A63	46	21859	49	21906
44	122484	45	88A64	47	21860	50	21907
45	122485	46	88A65	48	21861	51	21908
46	122486	47	88A66	49	21862	52	21909
47	122487	48	88A67	50	21863	53	21910
48	122488	49	88A68	51	21864	54	21911
49	122489	50	88A69	52	21865	55	21912
50	122490	51	88A70	53	21866	56	21913
51	122491	52	88A71	54	21867	57	21914
52	122492	53	88A72	55	21868	58	21915
53	122493	54	88A73	56	21869	59	21916
54	122494	55	88A74	57	21870	60	21917
55	122495	56	88A75	58	21871	61	21918
56	122496	57	88A76	59	21872	62	21919
57	122497	58	88A77	60	21873	63	21920
58	122498	59	88A78	61	21874	64	21921
59	122499	60	88A79	62	21875	65	21922
60	122500	61	88A80	63	21876	66	21923
61	122501	62	88A81	64	21877	67	21924
62	122502	63	88A82	65	21878	68	21925
63	122503	64	88A83	66	21879	69	21926
64	122504	65	88A84	67	21880	70	21927
65	122505	66	88A85	68	21881	71	21928
66	122506	67	88A86	69	21882	72	21929
67	122507	68	88A87	70	21883	73	21930
68	122508	69	88A88	71	21884	74	21931
69	122509	70	88A89	72	21885	75	21932
70	122510	71	88A90	73	21886	76	21933
71	122511	72	88A91	74	21887	77	21934
72	122512	73	88A92	75	21888	78	21935
73	122513	74	88A93	76	21889	79	21936
74	122514	75	88A94	77	21890	80	21937
75	122515	76	88A95	78	21891	81	21938
76	122516	77	88A96	79	21892	82	21939
77	122517	78	88A97	80	21893	83	21940
78	122518	79	88A98	81	21894	84	21941
79	122519	80	88A99	82	21895	85	21942
80	122520	81	88A00	83	21896	86	21943
81	122521	82	88A01	84	21897	87	21944
82	122522	83	88A02	85	21898	88	21945
83	122523	84	88A03	86	21899	89	21946
84	122524	85	88A04	87	21900	90	21947
85	122525	86	88A05	88	21901	91	21948
86	122526	87	88A06	89	21902	92	21949
87	122527	88	88A07	90	21903	93	21950
88	122528	89	88A08	91	21904	94	21951
89	122529	90	88A09	92	21905	95	21952
90	122530	91	88A10	93	21906	96	21953
91	122531	92	88A11	94	21907	97	21954
92	122532	93	88A12	95	21908	98	21955
93	122533	94	88A13	96	21909	99	21956
94	122534	95	88A14	97	21910	100	21957
95	122535	96	88A15	98	21911	101	21958
96	122536	97	88A16	99	21912	102	21959
97	122537	98	88A17	100	21913	103	21960
98	122538	99	88A18	101	21914	104	21961
99	122539	100	88A19	102	21915	105	21962
100	122540	101	88A20	103	21916	106	21963

A-camera pictures			
Index No.	DAS NO.	Index No.	DAS NO.
1	9270214	14	8938044
2	9198324	15	9198044
3	9126434	16	1210207
4	9054544	17	1070207
5	8982654	18	9892234
6	8910764	19	9810234
7	8838874	20	9738344
8	8766984	21	9666454
9	8695094	22	9594564
10	8623204	23	9522674
11	8551314	24	9450784
12	8479424	25	9378894
13	8407534	26	9307004

INDEX TO 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. The DAS number may vary slightly (usually