

24

Astronomical Observations
of Earth's Craters

Series II Number 22

N63-12353
code-1

RESEARCH REPORT NO. 4, November 1962, NASA GRANT G246-62

CATALOG OF LUNAR CRATERS I

by

Gerald S. Hawkins and Peter W. Mitchell

OTS PRICE

XEROX \$ 2.60
MICROFILM \$ 0.92

UNPUBLISHED PRELIMINARY DATA

Introduction

This catalog gives the selenographic coordinates of all craters observable on a selected portion of the moon's surface. The diameter of the crater together with comments on shape are also given. Approximately 25 per cent of the craters have been measured previously by other observers. The catalog gives the position found in the present series of measurements and the name adopted by the International Astronomical Union.

Residuals and errors

The residuals from the determination of plate constants gave an rms. value less than ± 0.0003 for ξ and η , corresponding to an uncertainty in position on the surface of ± 0.5 km. Although undetected systematic errors almost certainly exist, the positions given are probably reliable to ± 1.0 km. The error in determining the diameter of the craters depends to a great extent on the individual crater. The error is estimated as ± 30 per cent for small craters, decreasing to ± 10 per cent for the largest craters.

Selection criteria

(1.) A crater must have at least half of its wall clearly visible.

(2.) When foreshortening has been allowed for, a crater must be approximately circular. If elliptical, its eccentricity must not be greater than 0.75, i.e. the ratio of major to minor axes must not exceed 1.5. A crater may be polygonal, but its longest diameter must not exceed 1.5 times its shortest diameter.

(3.) A distinct shadow must be visible on some photograph of the crater, and the shadow must be properly oriented with respect to the sun.

The only types of craters which are likely to be missing in significant numbers are (a) those which are very small (less than 3 km in diameter) and (b) those which are very shallow and far from the terminator.

Boundaries of Section

The section studied here was a strip on sheet C 5-a of the "Photographic Lunar Atlas", (Kuiper, 1960.) The east and west borders of the area followed the lines defined by the equations:

$$\eta = -7.57 \xi - 0.10 \quad (1)$$

$$\eta = -7.57 \xi + 1.45 \quad (2)$$

The north and south boundaries were taken as the edges of the photograph.

Calculation of the plate constants

The method used to calculate the plate constants is that described by Belsky (1962). For convenience the x and y axes were chosen parallel to the edges of the photograph, the origin was set at the lower left hand corner, and x and y were measured in inches. The photograph was oriented with south at the top.

The first two lines (01, 02) on the first page of the "Calculation of Plate Constants and of Rms Error" give the constants A_1 to F_1 in the equation

$$\xi = A_1 x^2 + B_1 xy + C_1 y^2 + D_1 x + E_1 y + F_1 \quad (3)$$

The second two lines (03, 04) give the constants in the equation

$$\eta = A_2 x^2 + B_2 xy + C_2 y^2 + D_2 x + E_2 y + F_2 \quad (4)$$

For example, $A = -.11039169E - 04$ should be interpreted as $A = - 0.11039169 \times 10^{-4}$.

Similarly, on the first page entitled "Calculation of Plate Constants and of Rms Error (Inverse Constants)", the first four lines give the constants in the equations

$$x = f(\xi, \eta) \quad \text{and} \quad y = f(\xi, \eta).$$

Line 05 on the first page entitled "Calculation of Plate Constants and of Rms Error" gives the scale factor f , which was calculated in the following manner. Several pairs of craters, whose coordinates (ξ, η, x, y) are known, were chosen such that for each pair the line joining the craters is very nearly parallel to the limb of the moon. The distance between the craters on the photograph, in inches, was measured either directly or by using the equation:

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \quad (5)$$

The same distance was measured in units of the Moon's radius as follows:

$$D = \sqrt{(\xi_1 - \xi_2)^2 + (\eta_1 - \eta_2)^2 + (\zeta_1 - \zeta_2)^2} \quad (6)$$

where $\zeta = \sqrt{1 - \xi^2 - \eta^2}$. For two craters on a line nearly parallel to the limb $(\zeta_1 - \zeta_2)^2$ is negligible. Then the scale factor f is given, in kilometers per inch on the photograph, by:

$$f = \frac{R \cdot D}{d} \quad (7)$$

where R is the lunar radius in km. Values for f are computed for as many pairs of craters as can conveniently be chosen; the average value thus obtained, with its estimated error, is quoted in line 05.

The remainder of the pages under the heading "Calculation of the Plate Constants and of Rms Error" give the coordinates of the craters used for the calculation (Belsky 1962).

Explanation of Columns in the Catalog

The first column (CRATER) gives the designation of craters. Named craters follow the IAU system (Blagg and Muller 1932).

Columns 2 and 3 (XI and ETA) give the computed orthographic coordinates of each crater. These values are reliable to three places of decimal.

Columns 4 and 5 (X and Y) give the coordinates of each crater, in inches, as measured on the photograph.

Column 6 (DIAM) gives the diameter of each crater in kilometers. The diameter of each crater was measured in inches on the photograph, and the scale factor described above was used to convert to kilometers. Diameters are peak-to-peak and parallel to the limb, except for elliptical craters for which the foreshortening was removed and the longest diameter taken. The smallest craters included in the catalog are approximately one kilometer in diameter, corresponding to 0.03 inches on the photographs.

Column 7 (Q) provides an index to how well each crater fulfills our criteria for crater selection. A crater of quality "C" barely meets the minimum requirements for inclusion in the catalog. It may have just half of its wall visible, or be very elliptical, or show a shadow on only one

photograph, or be so small as to be barely visible. Craters of quality "B" may have a small part of the wall missing or be somewhat elliptical or polygonal. Craters of quality "A" show distinct, properly oriented shadows on at least two photographs taken under opposing illuminations, have complete or nearly complete walls, and are not strongly elliptical or polygonal.

Column 8 (P) denotes how perfect a polygon each crater is. Craters for which there is no entry in this column are circular or nearly so. "A" craters are well-defined, quite regular, complete polygons. A "B" crater is less regular than the "A" polygons, may have sides of drastically unequal length, or may have one or more sides missing. A "C" crater is not a well-defined polygon; it may be a circular crater with irregular walls, or if it is a true polygon the number of its sides cannot be ascertained. In this column, the letter (A, B, or C) is followed by a digit giving the number of sides in the polygon. For example, "A6" denotes a well-defined, hexagonal crater. A "B4" crater may be a square with one side missing, or a trapezoidal formation, etc.

Column 9 (RMKS) contains a series of numbered asterisks referring the reader to additional remarks or information given on a separate page at the end of the catalog.

Column 10 (REG) gives the number of the photograph on which each crater was measured. All craters in the first part of the catalog were measured on sheet C5-a (Kuiper 1960).

REFERENCES

Belsky, L., 1962. The transformation between Cartesian and Conic Coordinates. Moon Project, Report 1, August 1962, Boston University, NASA G246-62.

Blagg, Mary A., and Müller, K., 1932. Named Lunar Craters, Commission 17, International Astronomical Union, Percy Lund and Humphries, London.

Kuiper, G. P., 1960. Photographic Lunar Atlas, Univ. Chicago Press.

BOSTON UNIVERSITY SURVEY OF LUNAR CRATERS

CALCULATION OF PLATE CONSTANTS AND OF RMS ERROR

BUMOON

A=-.11039169E-04	B=-.18881949E-05	C= .16455016E-05	01
D=-.20016551E-01	E=-.22161356E-02	F= .32797308E 00	02
A= .13389906E-04	B=-.39584288E-05	C= .18179691E-04	03
D= .17543486E-02	E=-.19884531E-01	F=-.54182641E-02	04
f: 1 inch = (35.93 ± 0.45) km			05

X	Y	XSI	XSI(C)	DELTA	ETA	ETA(C)	DELTA
13.6700	01.3000	00.0492	00.0493	-00.0001	-00.0046	-00.0048	00.0002
06.9000	02.8100	00.1830	00.1830	-00.0000	-00.0486	-00.0484	-00.0001
09.6000	02.4900	00.1293	00.1292	00.0000	-00.0369	-00.0368	-00.0000
09.2200	04.1800	00.1330	00.1331	-00.0001	-00.0707	-00.0710	00.0003
13.5700	04.7300	00.0432	00.0437	-00.0005	-00.0730	-00.0730	00.0000
15.5700	04.3400	00.0041	00.0039	00.0001	-00.0608	-00.0610	00.0002
13.3400	05.2000	00.0477	00.0473	00.0003	-00.0828	-00.0828	00.0000
13.6200	05.8600	00.0405	00.0402	00.0002	-00.0954	-00.0952	-00.0001
05.9300	06.1200	00.1951	00.1953	-00.0002	-00.1161	-00.1157	-00.0003
07.6800	07.9500	00.1562	00.1559	00.0002	-00.1487	-00.1483	-00.0003
12.6700	07.6000	00.0560	00.0556	00.0003	-00.1320	-00.1314	-00.0005
13.2700	07.9400	00.0423	00.0427	-00.0004	-00.1373	-00.1369	-00.0003
11.7400	08.6900	00.0723	00.0721	00.0001	-00.1550	-00.1548	-00.0001
09.0000	08.2200	00.1288	00.1286	00.0001	-00.1514	-00.1510	-00.0003
05.9000	08.1800	00.1913	00.1913	-00.0000	-00.1565	-00.1562	-00.0002
08.6900	09.7700	00.1315	00.1315	-00.0000	-00.1819	-00.1820	00.0001
12.0000	09.9300	00.0643	00.0641	00.0001	-00.1787	-00.1785	-00.0001
08.5500	10.4600	00.1327	00.1328	-00.0001	-00.1957	-00.1957	00.0000
07.3900	10.0100	00.1572	00.1572	-00.0000	-00.1886	-00.1892	00.0006
04.8300	10.6900	00.2076	00.2074	00.0001	-00.2077	-00.2073	-00.0003
04.1800	11.3000	00.2197	00.2191	00.0005	-00.2204	-00.2204	00.0000
05.4100	12.4400	00.1918	00.1919	-00.0001	-00.2400	-00.2403	00.0003
08.5100	13.0300	00.1283	00.1280	00.0002	-00.2463	-00.2459	-00.0003

X	Y	XSI	XSI(C)	DELTA	ETA	ETA(C)	DELTA
06.5200	13.5700	00.1671	00.1670	00.0000	-00.2603	-00.2602	-00.0000
12.5600	02.7800	00.0461	00.0464	-00.0003	-00.2330	-00.2330	00.0000
13.0800	15.0900	00.0310	00.0308	00.0001	-00.2770	-00.2768	-00.0001
16.2900	01.7900	-00.0055	-00.0050	-00.0004	-00.0092	-00.0089	-00.0002
07.5900	02.5400	00.1700	00.1697	00.0002	-00.0416	-00.0417	00.0001
13.3100	02.9700	00.0532	00.0529	00.0002	-00.0388	-00.0387	-00.0000
07.4000	03.8800	00.1708	00.1706	00.0001	-00.0684	-00.0686	00.0002
13.7700	04.7800	00.0400	00.0395	00.0004	-00.0737	-00.0736	-00.0000
13.8700	04.9900	00.0373	00.0370	00.0002	-00.0773	-00.0775	00.0002
14.9500	04.9300	00.0152	00.0152	-00.0000	-00.0740	-00.0740	-00.0000
05.7800	05.3800	00.1998	00.1999	-00.0001	-00.1016	-00.1014	-00.0001
11.3900	05.0700	00.0873	00.0872	00.0000	-00.0844	-00.0842	-00.0001
05.7900	06.8800	00.1967	00.1964	00.0002	-00.1309	-00.1309	00.0000
13.9400	07.2200	00.0303	00.0306	-00.0003	-00.1217	-00.1213	-00.0003
12.8500	08.4300	00.0504	00.0501	00.0002	-00.1476	-00.1474	-00.0001
11.5000	08.2800	00.0777	00.0779	-00.0002	-00.1472	-00.1472	00.0000
04.8000	09.7800	00.2095	00.2100	-00.0005	-00.1893	-00.1896	00.0003
07.4000	09.4100	00.1579	00.1584	-00.0005	-00.1774	-00.1774	00.0000
11.6900	09.6800	00.0711	00.0709	00.0001	-00.1738	-00.1743	00.0005
14.6000	09.3800	00.0127	00.0124	00.0002	-00.1621	-00.1624	00.0003
09.2200	10.3400	00.1192	00.1195	-00.0003	-00.1919	-00.1921	00.0002
07.5200	10.9300	00.1524	00.1526	-00.0002	-00.2070	-00.2069	-00.0000
04.7900	11.4300	00.2068	00.2066	00.0001	-00.2215	-00.2218	00.0003
09.7000	11.2400	00.1079	00.1078	00.0000	-00.2086	-00.2087	00.0001
05.9700	12.6100	00.1801	00.1802	-00.0001	-00.2427	-00.2426	-00.0000
06.4500	13.8500	00.1682	00.1678	00.0003	-00.2661	-00.2658	-00.0002
12.7800	11.9800	00.0438	00.0437	00.0000	-00.2163	-00.2170	00.0007
10.6000	14.1400	00.0831	00.0832	-00.0001	-00.2637	-00.2634	-00.0002
13.1900	13.7000	00.0315	00.0316	-00.0001	-00.2498	-00.2496	-00.0001

XSI RMS.= .26301135E-03

ETA RMS.=

.27294249E-03

BOSTON UNIVERSITY SURVEY OF LUNAR CRATERS

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.0103	.0216	15.71	00.19	003.2	A			C5A
	.0080	.0194	15.81	00.31	007.2	A			C5A
	.0270	.0198	14.89	00.19	005.7	A			C5A
	.0294	.0178	14.76	00.28	002.2	A			C5A
	.0421	.0116	14.11	00.52	001.4	A			C5A
	.1030	.0108	11.14	00.25	005.4	B		*1,2	C5A
	.1085	.0136	10.89	00.08	006.1	A			C5A
	.0039	.0094	16.34	00.87	001.8	A			C5A
	.0017	.0018	16.02	01.22	002.9	A			C5A
	.0046	.0077	15.91	00.91	001.8	A			C5A
	.0198	.0051	15.16	00.96	002.2	A			C5A
	.0239	.0036	14.95	01.01	002.5	B			C5A
	.0324	.0023	14.53	01.03	001.4	B			C5A
	.0355	.0042	14.39	00.92	002.9	A			C5A
	.0399	.0080	14.20	00.71	002.5	A			C5A
	.0432	.0099	14.05	00.60	001.4	A			C5A
	.0433	.0078	14.03	00.70	001.1	C			C5A
	.0882	.0082	11.85	00.45	002.5	B			C5A
	.1035	.0079	11.10	00.39	003.6	A			C5A
	.1062	.0098	10.98	00.28	003.6	A			C5A
	.1513	.0035	08.74	00.37	003.6	A			C5A
	.1687	.0060	07.90	00.16	002.5	B		*1	C5A
	.1712	.0010	07.75	00.40	021.6	C	B6	*4	C5A
OPPOLZER A	.0050	-.0089	16.29	01.79	003.6	A			C5A
	.0147	-.0054	15.35	01.51	003.2	A			C5A
	.0261	-.0066	14.79	01.51	002.2	A			C5A
	.0290	-.0045	14.66	01.39	003.2	A			C5A
	.0343	-.0016	14.42	01.22	001.1	B			C5A
	.0364	-.0083	14.28	01.54	001.8	C			C5A
	.0385	-.0038	14.20	01.31	001.1	C			C5A
	.0449	-.0019	13.90	01.18	001.8	A			C5A
REAMUR D	.0493	-.0048	13.67	01.30	004.3	A			C5A
	.0518	-.0081	13.53	01.45	003.6	B			C5A
RHAETICUS	.0864	-.0003	11.89	00.89	052.1	A		*1,3	C5A
RHAETICUS E	.1048	-.0026	10.98	00.91	005.0	A			C5A
	.1113	-.0025	10.66	00.87	001.8	A			C5A
	.1580	-.0045	08.37	00.74	003.6	A			C5A
	.1592	-.0060	08.30	00.81	002.9	A			C5A
	.1663	-.0031	07.97	00.63	002.9	B			C5A
	.1877	-.0088	06.89	00.81	003.6	B		*1	C5A
	.0096	-.0135	15.55	01.94	002.5	C			C5A
	.0262	-.0150	14.74	01.93	001.1	B			C5A
	.0571	-.0126	13.25	01.65	003.2	B			C5A
	.0599	-.0115	13.12	01.58	002.9	C			C5A
	.0945	-.0179	11.40	01.72	005.0	A			C5A
	.1013	-.0101	11.11	01.30	002.5	B			C5A
LADE M	.1638	-.0199	08.00	01.48	011.1	A			C5A
	.1711	-.0188	07.65	01.39	001.1	C			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	-.0047	-.0250	16.19	02.59	002.5	A			C5A
OPPOLZER	-.0071	-.0256	16.30	02.63	043.1	B	B4		C5A
	.0102	-.0228	15.47	02.40	004.0	A			C5A
	.0403	-.0247	14.00	02.34	002.2	A			C5A
	.0938	-.0252	11.39	02.09	001.8	A			C5A
	.1082	-.0271	10.68	02.11	004.0	A			C5A
E PICKERING A LADE	.1236	-.0280	09.92	02.08	004.3	A			C5A
	.1737	-.0221	07.50	01.54	052.8	A	B6	*5	C5A
	.1930	-.0267	06.53	01.68	001.4	A			C5A
	-.0057	-.0301	16.21	02.85	002.9	A			C5A
	.0093	-.0329	15.46	02.91	002.9	A			C5A
	.0100	-.0338	15.42	02.95	002.2	B			C5A
	.0106	-.0345	15.39	02.98	001.1	B			C5A
	.0111	-.0349	15.36	03.00	002.5	B			C5A
	.0356	-.0339	14.18	02.82	001.8	A			C5A
	.0376	-.0373	14.06	02.98	003.6	A			C5A
SEELIGER	.0529	-.0387	13.31	02.97	009.7	A			C5A
SEELIGER A	.0542	-.0328	13.28	02.67	004.0	A			C5A
	.0682	-.0395	12.56	02.93	001.4	B			C5A
	.0761	-.0385	12.18	02.84	003.6	B			C5A
E PICKERING B	.1292	-.0368	09.60	02.49	006.5	A			C5A
	.1478	-.0330	08.71	02.21	002.9	B			C5A
	.1551	-.0317	08.36	02.11	003.6	A			C5A
	.1575	-.0382	08.21	02.42	002.5	B			C5A
	.1584	-.0372	08.17	02.37	001.8	B			C5A
	.1749	-.0394	07.35	02.40	002.9	B			C5A
	.1924	-.0307	06.54	01.88	003.2	A			C5A
REAMUR	.0120	-.0418	15.28	03.34	055.0	A	B5		C5A
	.1697	-.0417	07.59	02.54	003.6	A			C5A
	.1763	-.0486	07.23	02.85	002.5	A			C5A
	.1772	-.0463	07.20	02.73	002.2	A			C5A
	.1794	-.0479	07.08	02.80	002.2	B			C5A
SAUNDER C	.1830	-.0484	06.90	02.81	004.0	A			C5A
	.1897	-.0435	06.60	02.53	002.5	A			C5A
	.1945	-.0407	06.38	02.37	003.2	B			C5A
	.0022	-.0542	15.69	04.01	003.6	A			C5A
	.0037	-.0556	15.61	04.07	004.0	A			C5A
	.0399	-.0578	13.84	03.99	002.5	B			C5A
	.0484	-.0565	13.43	03.88	003.6	A			C5A
	.0837	-.0553	11.72	03.64	003.2	C			C5A
E PICKERING REAMUR C	.1224	-.0501	09.86	03.19	016.5	A			C5A
	.0039	-.0610	15.57	04.34	004.3	B			C5A
	.0167	-.0696	14.90	04.70	006.1	B			C5A
	.0183	-.0662	14.84	04.52	006.8	A			C5A
	.0245	-.0646	14.55	04.41	002.9	A			C5A
	.0250	-.0604	14.55	04.20	032.3	A			C5A
	.0272	-.0645	14.42	04.39	002.2	A			C5A
	.0305	-.0658	14.25	04.44	003.6	A			C5A
	.0312	-.0673	14.21	04.51	003.6	A			C5A
	.0357	-.0654	14.00	04.39	004.7	B			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.0754	-.0630	12.08	04.07	003.6	B			C5A
	.0761	-.0697	12.01	04.40	002.9	A			C5A
HORROCKS	.1024	-.0690	10.73	04.23	030.5	A	B4		C5A
	.1474	-.0680	08.54	03.96	002.9	B			C5A
	.1518	-.0688	08.32	03.98	002.5	B			C5A
	.1519	-.0680	08.32	03.94	001.8	B			C5A
SAUNDER B	.1706	-.0686	07.40	03.88	006.5	A			C5A
	.1750	-.0691	07.18	03.88	002.9	B			C5A
	.1794	-.0681	06.97	03.81	004.0	C			C5A
REAMUR A	.0046	-.0751	15.46	05.04	016.2	A	C		C5A
	.0048	-.0799	15.42	05.28	002.9	B			C5A
	.0128	-.0750	15.06	04.99	003.2	A			C5A
REAMUR B	.0152	-.0740	14.95	04.93	002.9	A			C5A
	.0244	-.0726	14.51	04.81	001.8	C			C5A
HIPPARCHUS D	.0370	-.0775	13.87	04.99	005.0	A			C5A
HIPPARCHUS E	.0395	-.0736	13.77	04.78	006.1	A			C5A
HIPPARCHUS F	.0437	-.0730	13.57	04.73	010.1	A			C5A
	.0472	-.0788	13.37	05.00	002.2	B			C5A
	.0494	-.0714	13.30	04.62	003.6	A			C5A
	.0539	-.0753	13.06	04.79	002.9	B			C5A
	.0574	-.0734	12.90	04.68	002.9	B			C5A
	.0617	-.0756	12.68	04.77	001.4	C			C5A
	.0619	-.0719	12.69	04.58	001.8	B			C5A
	.0647	-.0726	12.55	04.60	002.5	B			C5A
	.0691	-.0722	12.34	04.56	001.1	C			C5A
	.0701	-.0707	12.30	04.48	001.1	C			C5A
	.0719	-.0741	12.19	04.64	002.9	A			C5A
	.0836	-.0707	11.64	04.41	002.2	B			C5A
HORROCKS M	.1331	-.0710	09.22	04.18	005.0	A			C5A
	.1348	-.0776	09.10	04.50	001.4	C			C5A
	.1376	-.0744	08.98	04.33	005.0	C			C5A
SAUNDER	.1516	-.0738	08.30	04.23	046.0	B	A5		C5A
	.1749	-.0719	07.17	04.02	002.5	B			C5A
	.1763	-.0720	07.10	04.02	003.2	B			C5A
	.1805	-.0706	06.90	03.93	007.2	A			C5A
	.1838	-.0783	06.70	04.30	002.9	A			C5A
	.0186	-.0820	14.74	05.31	002.9	B			C5A
	.0418	-.0830	13.61	05.24	004.3	B			C5A
	.0431	-.0857	13.53	05.37	003.2	C			C5A
HIPPARCHUS P	.0473	-.0828	13.34	05.20	006.1	A			C5A
HIPPARCHUS N	.0872	-.0842	11.39	05.07	006.5	A			C5A
	.0970	-.0882	10.89	05.22	001.4	B			C5A
	.0979	-.0877	10.85	05.19	001.8	A			C5A
	.0983	-.0819	10.86	04.90	001.4	B			C5A
	.1040	-.0845	10.57	05.00	002.2	A			C5A
	.1045	-.0875	10.53	05.15	003.6	A			C5A
HIPPARCHUS G	.1292	-.0874	09.32	05.02	015.8	A			C5A
HIPPARCHUS W	.1351	-.0884	09.03	05.04	004.0	A			C5A
	.1426	-.0835	08.69	04.76	006.5	A			C5A
	.1811	-.0834	06.80	04.57	001.4	B			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.1958	-.0820	06.09	04.43	002.9	B			C5A
	.0006	-.0959	15.54	06.10	001.4	B			C5A
GYLDEN	.0049	-.0923	15.35	05.90	050.3	A	A5		C5A
	.0110	-.0948	15.04	05.99	005.4	A			C5A
	.0338	-.0969	13.92	05.98	003.2	A			C5A
	.0350	-.0919	13.89	05.72	002.9	A			C5A
	.0397	-.0993	13.62	06.07	005.0	C			C5A
HIPPARCHUS H	.0402	-.0952	13.62	05.86	004.7	A			C5A
	.0437	-.0984	13.43	06.00	002.2	C			C5A
	.0448	-.0905	13.42	05.60	002.5	C			C5A
	.0489	-.0947	13.20	05.79	002.9	C			C5A
HIPPARCHUS	.0883	-.0909	11.30	05.40	150.9	A	B4		C5A
	.1594	-.0953	07.80	05.27	003.6	A			C5A
	.1640	-.0904	07.60	05.00	001.8	C			C5A
	.1964	-.0907	06.01	04.86	002.2	B			C5A
	.0052	-.1057	15.26	06.57	006.8	C			C5A
	.0114	-.1042	14.97	06.46	003.2	B			C5A
	.0142	-.1083	14.81	06.65	003.2	C			C5A
	.0175	-.1024	14.68	06.34	005.4	A			C5A
	.0365	-.1040	13.75	06.32	002.9	C			C5A
	.0377	-.1003	13.71	06.13	002.5	A			C5A
	.0410	-.1007	13.55	06.13	003.2	B			C5A
	.0426	-.1098	13.42	06.58	002.9	C			C5A
	.0561	-.1036	12.80	06.20	001.1	B			C5A
	.0622	-.1078	12.48	06.38	009.3	B			C5A
	.0886	-.1097	11.18	06.34	003.6	B			C5A
	.1133	-.1018	10.02	05.82	001.4	B			C5A
	.1439	-.1046	08.51	05.81	002.5	B			C5A
	.1461	-.1086	08.38	06.00	001.4	B			C5A
	.1489	-.1053	08.26	05.82	001.8	C			C5A
	.1653	-.1086	07.44	05.91	003.2	B			C5A
	.1694	-.1044	07.26	05.68	010.1	C	A4		C5A
	.1955	-.1061	05.97	05.64	001.1	B			C5A
ANDEL K	.1999	-.1014	05.78	05.38	004.0	A			C5A
	.0145	-.1131	14.77	06.89	002.5	B			C5A
	.0153	-.1110	14.74	06.78	003.2	B			C5A
HIPPARCHUS U	.0621	-.1176	12.43	06.87	008.3	A			C5A
	.0665	-.1130	12.24	06.62	003.6	C			C5A
	.0953	-.1199	10.80	06.82	003.6	C			C5A
	.1100	-.1148	10.11	06.49	001.4	B			C5A
	.1332	-.1125	08.99	06.26	005.0	B			C5A
	.1474	-.1183	08.26	06.48	001.1	B			C5A
HIPPARCHUS L	.1559	-.1191	07.84	06.48	013.7	A			C5A
	.1575	-.1145	07.79	06.24	001.4	B			C5A
	.1671	-.1106	07.34	06.00	007.9	B	C4		C5A
	.1680	-.1137	07.28	06.15	001.4	C			C5A
ANDEL H	.1953	-.1157	05.93	06.12	006.5	A			C5A
	.1975	-.1135	05.83	06.00	001.1	C			C5A
	.2000	-.1193	05.68	06.28	002.5	A			C5A
	.2010	-.1150	05.65	06.06	003.6	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.0087	-.1280	14.97	07.67	005.7	B			C5A
HIPPARCHUS B	.0306	-.1213	13.94	07.22	006.5	A			C5A
HIPPARCHUS K	.0377	-.1209	13.60	07.16	012.2	A			C5A
	.0423	-.1205	13.38	07.12	005.7	A			C5A
HIPPARCHUS T	.0622	-.1238	12.39	07.18	007.2	A			C5A
	.0636	-.1259	12.31	07.28	004.3	C			C5A
	.0716	-.1203	11.95	06.96	002.5	B			C5A
	.0755	-.1261	11.73	07.23	010.4	B			C5A
	.1015	-.1211	10.49	06.85	001.4	C			C5A
HIPPARCHUS C	.1422	-.1285	08.46	07.02	017.6	A			C5A
ANDEL B	.1724	-.1272	06.99	06.81	007.5	B			C5A
	.1973	-.1210	05.80	06.38	002.2	B			C5A
	.0098	-.1345	14.88	07.99	004.3	B			C5A
	.0151	-.1350	14.62	07.99	003.6	C			C5A
	.0181	-.1324	14.49	07.84	005.4	B			C5A
MULLER F	.0205	-.1330	14.37	07.86	004.7	B			C5A
	.0228	-.1344	14.25	07.92	006.1	A			C5A
	.0274	-.1315	14.04	07.75	004.0	B			C5A
MULLER	.0356	-.1324	13.64	07.75	022.3	A	C		C5A
MULLER O	.0427	-.1369	13.27	07.94	010.8	A			C5A
	.0453	-.1338	13.16	07.77	001.4	C			C5A
	.0520	-.1396	12.80	08.03	003.6	A			C5A
HIPPARCHUS J	.0556	-.1314	12.67	07.60	014.7	A			C5A
	.0565	-.1399	12.58	08.02	006.5	A			C5A
	.0658	-.1355	12.15	07.75	003.6	B			C5A
	.0676	-.1329	12.08	07.61	003.6	C			C5A
	.0769	-.1376	11.60	07.80	003.2	B			C5A
	.0795	-.1362	11.48	07.72	003.2	B			C5A
	.0892	-.1372	11.00	07.72	002.2	B			C5A
HALLEY	.1002	-.1383	10.46	07.72	036.3	A			C5A
	.1084	-.1326	10.09	07.39	004.0	A			C5A
	.1096	-.1368	10.01	07.60	002.9	A			C5A
	.1120	-.1391	09.88	07.70	003.6	B			C5A
HIND	.1266	-.1363	09.18	07.49	028.7	A		*1,6	C5A
	.1550	-.1325	07.81	07.16	003.2	A			C5A
	.1565	-.1303	07.75	07.04	003.2	A			C5A
	.1639	-.1373	07.35	07.36	007.9	C			C5A
	.1754	-.1307	06.82	06.97	005.0	B			C5A
	.1774	-.1313	06.72	06.99	004.3	B			C5A
	.1781	-.1395	06.64	07.40	001.1	C			C5A
	.1803	-.1399	06.53	07.41	001.1	A			C5A
ANDEL J	.1964	-.1309	05.79	06.88	006.1	A			C5A
	.2087	-.1320	05.18	06.88	006.1	A			C5A
	.0241	-.1483	14.11	08.61	004.3	B			C5A
	.0283	-.1441	13.93	08.38	002.9	B			C5A
MULLER A	.0370	-.1417	13.52	08.21	010.8	A			C5A
	.0433	-.1421	13.21	08.20	005.7	B			C5A
	.0439	-.1402	13.19	08.10	005.0	B			C5A
	.0467	-.1415	13.05	08.15	006.1	B			C5A
HIPPARCHUS Q	.0501	-.1474	12.85	08.43	008.6	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.0519	-.1446	12.78	08.28	004.3	A			C5A
	.0546	-.1425	12.66	08.16	004.3	A			C5A
	.0576	-.1432	12.51	08.18	005.4	A			C5A
	.0611	-.1433	12.34	08.17	003.2	A			C5A
HALLEY B	.0779	-.1472	11.50	08.28	006.5	B			C5A
	.0912	-.1493	10.84	08.32	002.9	B			C5A
	.1008	-.1489	10.37	08.25	006.8	C			C5A
	.1162	-.1490	09.62	08.18	004.0	B			C5A
	.1168	-.1437	09.62	07.91	001.4	B			C5A
	.1203	-.1472	09.43	08.07	003.2	B			C5A
	.1393	-.1469	08.50	07.96	002.2	B			C5A
HIPPARCHUS Z	.1559	-.1483	07.68	07.95	006.5	A			C5A
	.1627	-.1440	07.37	07.70	008.6	C			C5A
	.1684	-.1407	07.11	07.51	003.6	B			C5A
	.1714	-.1468	06.93	07.80	001.4	B			C5A
	.1758	-.1456	06.72	07.72	001.4	C			C5A
	.1815	-.1438	06.45	07.60	002.2	B			C5A
ANDEL F	.1904	-.1446	06.01	07.60	010.1	A			C5A
	.1924	-.1414	05.93	07.43	003.6	A			C5A
	.1965	-.1428	05.72	07.48	002.2	B			C5A
	.1981	-.1467	05.62	07.67	005.0	B			C5A
	.2041	-.1459	05.33	07.60	002.2	C			C5A
	.0231	-.1587	14.10	09.14	005.0	A			C5A
	.0361	-.1549	13.49	08.88	002.9	B			C5A
	.0381	-.1535	13.40	08.80	002.9	A			C5A
	.0491	-.1542	12.86	08.78	004.0	B			C5A
	.0496	-.1519	12.85	08.66	004.3	B			C5A
	.0535	-.1592	12.62	09.01	006.8	C			C5A
	.0564	-.1520	12.52	08.63	003.6	A			C5A
	.0587	-.1534	12.40	08.69	004.3	A			C5A
	.0591	-.1592	12.35	08.98	002.5	B			C5A
	.0633	-.1561	12.16	08.80	004.3	A			C5A
	.0633	-.1594	12.14	08.97	005.7	A			C5A
	.0695	-.1503	11.89	08.48	003.6	B			C5A
ALBATEGNIUS M	.0721	-.1548	11.74	08.69	009.0	A			C5A
	.0730	-.1594	11.67	08.92	004.7	B			C5A
	.0858	-.1567	11.06	08.72	003.2	C			C5A
	.0964	-.1594	10.53	08.80	004.3	C		*1	C5A
	.1204	-.1573	09.37	08.58	002.5	B			C5A
HIND C	.1286	-.1510	09.00	08.22	007.2	A			C5A
	.1710	-.1505	06.93	07.99	002.2	A			C5A
ANDEL C	.1913	-.1562	05.90	08.18	004.0	A			C5A
PTOLEMAEUS Y	.0124	-.1624	14.60	09.38	006.5	A			C5A
	.0327	-.1637	13.61	09.34	015.1	A	C		C5A
	.0530	-.1618	12.63	09.14	007.5	B			C5A
	.0658	-.1632	12.00	09.15	004.3	B			C5A
	.0670	-.1618	11.95	09.07	002.9	A			C5A
	.0713	-.1614	11.74	09.03	004.3	A			C5A
	.0729	-.1638	11.65	09.14	004.3	A			C5A
	.0729	-.1659	11.64	09.25	001.8	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.0756	-.1674	11.50	09.31	007.2	A			C5A
	.0954	-.1666	10.54	09.17	002.9	C			C5A
	.0973	-.1678	10.44	09.22	003.2	C		*1	C5A
	.1119	-.1692	09.72	09.22	003.6	B			C5A
	.1247	-.1679	09.10	09.09	003.6	B			C5A
	.1269	-.1627	09.02	08.82	005.7	B			C5A
	.1297	-.1600	08.90	08.67	003.2	C			C5A
	.1307	-.1671	08.81	09.02	011.5	B	B6		C5A
	.1566	-.1678	07.54	08.93	002.5	C			C5A
	.1616	-.1665	07.30	08.84	002.5	B			C5A
	.1698	-.1649	06.91	08.72	002.9	C			C5A
	.1756	-.1618	06.64	08.54	002.5	C			C5A
	.1866	-.1601	06.11	08.40	001.4	C			C5A
	.1903	-.1692	05.88	08.84	029.1	C	C	*7	C5A
	.2059	-.1676	05.12	08.69	002.5	C			C5A
	.0287	-.1747	13.74	09.92	004.0	B			C5A
	.0349	-.1710	13.46	09.70	010.4	A			C5A
	.0483	-.1783	12.77	10.00	005.7	B			C5A
	.0501	-.1710	12.72	09.62	006.5	B			C5A
	.0516	-.1798	12.60	10.06	002.5	C			C5A
	.0544	-.1728	12.50	09.69	003.2	C			C5A
	.0583	-.1736	12.31	09.71	006.8	C			C5A
	.0626	-.1736	12.10	09.69	001.8	C			C5A
ALBATEGNIUS C	.0641	-.1785	12.00	09.93	006.8	A			C5A
ALBATEGNIUS B	.0694	-.1745	11.76	09.70	018.3	A		*1,8	C5A
	.0709	-.1743	11.69	09.68	004.0	A			C5A
ALBATEGNIUS N	.0782	-.1712	11.35	09.49	010.1	A			C5A
	.1006	-.1726	10.25	09.45	004.3	B			C5A
HALLEY C	.1145	-.1710	09.58	09.30	004.0	A			C5A
	.1151	-.1784	09.51	09.67	005.4	A			C5A
	.1355	-.1786	08.51	09.58	002.9	A			C5A
	.1372	-.1784	08.43	09.56	002.2	B			C5A
	.1402	-.1777	08.29	09.51	009.3	A	B5		C5A
	.1435	-.1772	08.13	09.47	001.8	B			C5A
	.1579	-.1721	07.45	09.14	002.9	C			C5A
RITCHEY D	.1584	-.1774	07.40	09.41	007.2	A			C5A
	.1779	-.1759	06.45	09.24	006.8	A			C5A
	.1941	-.1772	05.65	09.23	008.3	A			C5A
	.0486	-.1823	12.73	10.20	002.9	A			C5A
	.0504	-.1811	12.65	10.13	002.9	C			C5A
	.1266	-.1876	08.90	10.08	002.9	A			C5A
	.1300	-.1828	08.76	09.82	001.8	B			C5A
	.1315	-.1820	08.69	09.77	004.3	A			C5A
	.1326	-.1884	08.60	10.09	002.9	B			C5A
	.1338	-.1814	08.58	09.73	002.2	B			C5A
	.1432	-.1855	08.10	09.89	012.9	B	B4		C5A
RITCHEY C	.1572	-.1892	07.39	10.01	006.5	A			C5A
ANDEL A	.1920	-.1869	05.70	09.73	014.0	B			C5A
ANDEL D	.1999	-.1867	05.31	09.68	006.5	A			C5A
ANDEL G	.2100	-.1896	04.80	09.78	004.3	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
ANDEL	.2112	--.1804	04.79	09.31	034.5	A	B4		C5A
	.0396	--.1948	13.10	10.88	002.9	A		C5A	
	.0458	--.1998	12.77	11.10	001.8	B		C5A	
	.0462	--.1931	12.79	10.76	004.0	B		C5A	
	.0508	--.1926	12.57	10.71	002.5	C		C5A	
KLEIN A ALBATEGNIUS	.0515	--.1966	12.51	10.91	009.3	A			C5A
	.0696	--.1927	11.65	10.62	139.0	A	B6	*6	C5A
	.0763	--.1971	11.30	10.81	001.1	A		C5A	
	.0786	--.1936	11.21	10.62	002.9	A			C5A
	.0808	--.1998	11.07	10.92	003.6	C		*9	C5A
ALBATEGNIUS J	.0868	--.1952	10.80	10.66	002.2	A			C5A
	.1064	--.1924	09.86	10.42	006.5	B			C5A
	.1090	--.1950	09.72	10.54	006.5	B			C5A
	.1097	--.1979	09.67	10.68	002.9	A			C5A
	.1187	--.1979	09.23	10.64	004.0	C			C5A
ALBATEGNIUS D	.1195	--.1921	09.22	10.34	004.3	A			C5A
	.1203	--.1993	09.14	10.70	003.6	B			C5A
	.1222	--.1959	09.07	10.52	009.7	B	B5		C5A
	.1260	--.1947	08.89	10.44	004.7	B		C5A	
	RITCHEY A	.1328	--.1957	08.55	10.46	005.4	A		
.1337		--.1911	08.53	10.22	004.0	A			C5A
RITCHEY	.1445	--.1921	08.00	10.22	025.2	C	A4		C5A
	.1466	--.1909	07.90	10.15	002.5	A		C5A	
	.1497	--.1980	07.71	10.49	002.5	C		C5A	
	.1690	--.1954	06.78	10.27	002.9	A			C5A
	.1713	--.1929	06.68	10.13	017.2	B	A4		C5A
	.1836	--.1980	06.05	10.33	006.5	B		C5A	
	.1890	--.1953	05.80	10.17	002.2	C			C5A
	.2079	--.1957	04.87	10.10	003.6	A			C5A
	.2159	--.1968	04.47	10.12	004.7	A			C5A
	.0242	--.2002	13.82	11.23	026.9	C	B4		C5A
	.0283	--.2095	13.57	11.68	002.5	B		C5A	
	.0297	--.2084	13.51	11.62	003.6	C		C5A	
	.0349	--.2098	13.25	11.66	004.0	C			C5A
	.0371	--.2060	13.16	11.46	003.6	C			C5A
	KLEIN	.0440	--.2069	12.82	11.47	046.7	A	B6	*6
.0441		--.2006	12.85	11.15	001.4	B	C5A		
.0716		--.2028	11.50	11.12	002.5	A			C5A
.0791		--.2049	11.12	11.19	004.3	C		*9	C5A
.0862		--.2056	10.77	11.19	001.4	C			C5A
ALBATEGNIUS L	.0930	--.2041	10.45	11.08	001.8	B			C5A
	.1078	--.2087	09.70	11.24	007.5	A			C5A
	.1258	--.2091	08.82	11.17	002.9	B			C5A
	.1398	--.2008	08.18	10.68	003.6	B			C5A
	.1438	--.2084	07.94	11.05	010.4	B	C		C5A
RITCHEY B	.1526	--.2069	07.52	10.93	007.2	A		C5A	
	.1535	--.2025	07.50	10.70	006.5	B			C5A
	.1568	--.2008	07.35	10.60	002.9	A			C5A
	.1839	--.2008	06.02	10.47	004.0	C			C5A
	.1977	--.2024	05.33	10.49	001.8	C			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG	
ANDEL E	.2069	-.2011	04.89	10.38	018.3	B	B5		C5A	
	.2074	-.2073	04.83	10.69	006.5	A			C5A	
	.0303	-.2158	13.44	11.99	005.0	B	B4		C5A	
	.0347	-.2167	13.22	12.01	004.3	B			C5A	
KLEIN C	.0367	-.2131	13.14	11.82	003.6	C			C5A	
	.0437	-.2170	12.78	11.98	006.8	A			C5A	
	.0726	-.2118	11.40	11.57	001.4	C			C5A	
	.0788	-.2116	11.10	11.53	001.1	C		*9	C5A	
ALBATEGNIUS T	.0836	-.2186	10.83	11.86	003.6	B			C5A	
	.0965	-.2187	10.20	11.80	002.5	C			C5A	
	.1036	-.2186	09.85	11.76	010.8	B	B6		C5A	
	.1062	-.2141	09.75	11.52	003.2	A			C5A	
	.1202	-.2170	09.05	11.60	002.9	A			C5A	
	.1356	-.2146	08.31	11.40	002.2	C			C5A	
	.1458	-.2112	07.83	11.18	003.2	C			C5A	
	.1499	-.2142	07.61	11.31	002.9	A			C5A	
	.1513	-.2184	07.52	11.52	001.8	B			C5A	
	.1515	-.2111	07.55	11.15	008.3	C	C		C5A	
	.1563	-.2175	07.28	11.45	005.4	B			C5A	
	.1593	-.2184	07.13	11.48	004.0	C			C5A	
	.1614	-.2137	07.05	11.23	008.3	A			C5A	
	.1623	-.2191	06.98	11.50	005.4	C			C5A	
	.1774	-.2163	06.25	11.29	004.3	B			C5A	
	.1826	-.2156	06.00	11.23	003.6	A			C5A	
	.1869	-.2190	05.77	11.38	001.1	C			C5A	
	.1972	-.2107	05.31	10.91	002.5	B			C5A	
	.2075	-.2134	04.79	11.00	012.6	C			C5A	
	PARROT W	.0146	-.2292	14.13	12.75	025.2	B	B6	*7	C5A
.0253		-.2271	13.62	12.59	006.5	A			C5A	
.0263		-.2215	13.60	12.30	002.9	B			C5A	
.0276		-.2213	13.54	12.28	002.5	C			C5A	
.0295		-.2209	13.45	12.25	002.9	B			C5A	
.0357		-.2223	13.14	12.29	004.0	C			C5A	
.0371		-.2212	13.08	12.23	003.6	B			C5A	
.0400		-.2245	12.92	12.38	006.5	A			C5A	
.0401		-.2273	12.90	12.52	004.7	B			C5A	
.0477		-.2215	12.56	12.19	005.7	A			C5A	
ALBATEGNIUS O		.0717	-.2288	11.35	12.44	006.5	B			C5A
		.0749	-.2280	11.20	12.38	001.4	B			C5A
ALBATEGNIUS P		.0768	-.2242	11.13	12.18	005.7	B			C5A
		.0776	-.2275	11.07	12.34	002.5	B			C5A
	.0815	-.2243	10.90	12.16	003.2	C			C5A	
	.0836	-.2215	10.81	12.01	004.3	B			C5A	
	.0851	-.2282	10.70	12.34	004.3	A			C5A	
	.0948	-.2242	10.25	12.09	002.9	C			C5A	
	.0956	-.2267	10.20	12.21	003.2	A			C5A	
	.0992	-.2217	10.05	11.94	003.2	A			C5A	
	.1002	-.2236	09.99	12.03	006.1	B			C5A	
	ALBATEGNIUS E	.1084	-.2234	09.59	11.98	014.4	A			C5A
		.1267	-.2265	08.68	12.05	002.2	C			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.1370	-.2279	08.17	12.07	001.4	B			C5A
	.1470	-.2257	07.69	11.91	002.5	C			C5A
	.1474	-.2238	07.68	11.81	002.5	C			C5A
	.1515	-.2297	07.45	12.09	002.9	B			C5A
	.1545	-.2207	07.35	11.62	002.2	B			C5A
ABULFEDA D	.1605	-.2277	07.02	11.95	020.5	B	B4		C5A
	.1726	-.2271	06.43	11.86	005.4	B			C5A
	.1740	-.2253	06.37	11.76	004.3	B			C5A
	.1818	-.2211	06.01	11.51	002.9	C			C5A
ABULFEDA C	.1839	-.2205	05.91	11.47	016.9	A	B6		C5A
	.1873	-.2212	05.74	11.49	002.9	B			C5A
	.1956	-.2218	05.33	11.48	002.5	B			C5A
	.1982	-.2206	05.21	11.41	001.8	B			C5A
	.2008	-.2209	05.08	11.41	001.1	C			C5A
	.2019	-.2202	05.03	11.37	004.3	A			C5A
ABULFEDA Q	.2066	-.2218	04.79	11.43	003.6	A			C5A
	.2076	-.2292	04.70	11.80	002.2	C			C5A
ABULFEDA R	.2191	-.2204	04.18	11.30	006.8	A			C5A
	.0300	-.2327	13.36	12.85	003.2	B			C5A
	.0348	-.2362	13.11	13.00	004.0	B			C5A
	.0350	-.2321	13.12	12.79	014.4	A	C		C5A
	.0408	-.2391	12.80	13.12	006.8	A			C5A
	.0464	-.2330	12.56	12.78	002.9	B			C5A
PARROT R	.0536	-.2333	12.21	12.76	012.2	A			C5A
	.0577	-.2353	12.00	12.84	001.1	C			C5A
	.0582	-.2362	11.97	12.88	001.1	C			C5A
	.0607	-.2396	11.83	13.04	002.5	C			C5A
	.0612	-.2384	11.81	12.98	006.1	B			C5A
	.0630	-.2301	11.77	12.55	006.8	B			C5A
	.0688	-.2333	11.47	12.68	004.7	C			C5A
	.0777	-.2375	11.01	12.85	007.5	A			C5A
	.0973	-.2380	10.05	12.78	002.9	B			C5A
	.1001	-.2340	09.94	12.56	002.5	B			C5A
ALBATEGNIUS S BURNHAM	.1032	-.2300	09.81	12.34	006.8	A			C5A
	.1234	-.2390	08.77	12.70	020.5	C	B4	*10	C5A
	.1257	-.2357	08.68	12.52	003.6	A			C5A
	.1263	-.2334	08.66	12.40	002.9	B			C5A
	.1340	-.2323	08.29	12.31	003.2	A			C5A
	.1357	-.2376	08.18	12.57	001.4	A			C5A
	.1447	-.2375	07.74	12.52	003.6	B			C5A
	.1511	-.2308	07.46	12.15	001.1	C			C5A
	.1568	-.2382	07.14	12.50	003.2	B			C5A
	.1610	-.2396	06.93	12.55	002.2	A			C5A
ABULFEDA H	.1616	-.2377	06.91	12.45	004.7	A			C5A
	.1724	-.2373	06.38	12.38	001.4	C			C5A
	.1736	-.2378	06.32	12.40	001.4	C			C5A
	.1788	-.2356	06.08	12.26	001.4	C			C5A
	.1799	-.2378	06.01	12.37	003.6	A			C5A
	.2085	-.2316	04.64	11.92	003.2	C			C5A
	.2108	-.2351	04.51	12.09	005.0	B			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.2115	-.2393	04.45	12.30	004.0	B			C5A
	.0238	-.2406	13.62	13.28	003.2	A			C5A
PARROT K	.0291	-.2425	13.35	13.35	046.7	B	C		C5A
PARROT X	.0316	-.2496	13.19	13.70	004.3	A			C5A
	.0415	-.2424	12.75	13.28	007.5	A			C5A
	.0615	-.2448	11.76	13.30	021.9	A	B4		C5A
	.0657	-.2499	11.53	13.54	002.2	B			C5A
	.0668	-.2490	11.48	13.49	002.5	B			C5A
	.0757	-.2442	11.07	13.20	003.6	C			C5A
PARROT U	.0758	-.2418	11.08	13.08	009.7	A	B4		C5A
	.0897	-.2420	10.40	13.02	010.1	A	C		C5A
VOGEL A	.0949	-.2417	10.15	12.98	010.1	A	B5		C5A
	.0969	-.2476	10.02	13.27	021.9	A	B4	*6	C5A
	.1006	-.2417	09.87	12.95	004.0	A			C5A
	.1022	-.2426	09.79	12.99	002.2	C			C5A
BURNHAM F	.1162	-.2468	09.08	13.13	009.7	A	A5		C5A
	.1232	-.2427	08.76	12.89	001.1	B			C5A
	.1233	-.2453	08.74	13.02	001.4	A			C5A
	.1280	-.2459	08.51	13.03	004.0	A			C5A
	.1315	-.2435	08.35	12.89	001.4	B			C5A
	.1413	-.2476	07.85	13.05	001.1	C			C5A
	.1502	-.2449	07.43	12.87	003.2	B			C5A
	.1521	-.2474	07.32	12.99	003.6	A			C5A
	.1526	-.2431	07.32	12.77	009.7	A	B6		C5A
	.1545	-.2459	07.21	12.90	003.6	B			C5A
	.1663	-.2409	06.66	12.59	001.4	C			C5A
	.1710	-.2464	06.40	12.85	004.7	B			C5A
ABULFEDA L	.1802	-.2426	05.97	12.61	005.4	A			C5A
	.1816	-.2447	05.89	12.71	003.6	A			C5A
	.1829	-.2473	05.81	12.84	003.2	C			C5A
	.1832	-.2411	05.83	12.52	001.4	C			C5A
	.1919	-.2403	05.41	12.44	003.2	A			C5A
	.1933	-.2418	05.33	12.51	004.0	B			C5A
	.2058	-.2431	04.71	12.52	002.5	C			C5A
	.2175	-.2495	04.10	12.79	003.6	A			C5A
	.0210	-.2542	13.68	13.99	003.2	B			C5A
	.0267	-.2529	13.41	13.89	006.8	B			C5A
PARROT	.0560	-.2503	12.00	13.61	071.5	A	B6		C5A
	.0665	-.2517	11.48	13.63	002.9	B			C5A
	.0910	-.2539	10.27	13.62	001.4	C			C5A
VOGEL	.0995	-.2585	09.83	13.81	028.4	A	B4	*6	C5A
	.1053	-.2528	09.58	13.49	003.6	B			C5A
	.1127	-.2559	09.20	13.61	001.4	C			C5A
	.1140	-.2556	09.14	13.59	002.5	B			C5A
	.1152	-.2539	09.09	13.50	003.2	A			C5A
	.1170	-.2563	08.99	13.61	002.5	B			C5A
	.1185	-.2519	08.94	13.38	004.0	B			C5A
BURNHAM A	.1189	-.2541	08.91	13.49	007.2	A	B4		C5A
	.1233	-.2525	08.70	13.39	002.9	A			C5A
	.1363	-.2595	08.03	13.68	002.9	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.1425	-.2581	07.73	13.58	001.1	C			C5A
	.1596	-.2515	06.93	13.16	003.6	B			C5A
	.1735	-.2565	06.22	13.35	009.3	A			C5A
ABULFEDA K	.1783	-.2561	05.99	13.31	008.6	A	B4		C5A
	.1814	-.2521	05.86	13.09	003.6	A			C5A
	.1829	-.2566	05.76	13.31	007.2	A			C5A
	.1844	-.2506	05.72	13.00	004.0	A			C5A
	.1955	-.2532	05.16	13.08	001.8	C			C5A
	.1991	-.2575	04.96	13.28	004.0	A			C5A
	.1997	-.2595	04.92	13.38	001.1	C			C5A
	.2025	-.2562	04.80	13.20	002.5	B			C5A
	.2114	-.2531	04.38	13.00	001.8	A			C5A
	.2204	-.2566	03.92	13.14	004.3	B			C5A
	.2223	-.2556	03.83	13.08	001.4	C			C5A
	.0292	-.2690	13.20	14.70	010.8	B			C5A
PARROT A	.0352	-.2628	12.94	14.35	021.6	A	B5		C5A
	.0396	-.2683	12.70	14.61	004.7	A			C5A
	.0675	-.2666	11.35	14.38	007.9	B	B4		C5A
	.0752	-.2614	11.00	14.08	004.0	B			C5A
	.0832	-.2634	10.60	14.14	004.3	A			C5A
ARGELANDER B	.0863	-.2672	10.43	14.32	006.8	B			C5A
	.1151	-.2618	09.05	13.90	001.8	C			C5A
	.1159	-.2693	08.97	14.28	002.5	B			C5A
	.1214	-.2698	08.70	14.28	003.2	A			C5A
BURNHAM B	.1215	-.2634	08.73	13.95	004.0	A			C5A
	.1223	-.2615	08.70	13.85	003.6	C			C5A
	.1284	-.2601	08.41	13.75	001.4	B			C5A
	.1423	-.2622	07.72	13.79	003.6	A			C5A
	.1501	-.2692	07.30	14.11	004.3	B			C5A
	.1571	-.2612	07.00	13.67	003.2	B			C5A
	.1581	-.2631	06.94	13.76	001.4	B			C5A
	.1586	-.2659	06.90	13.90	003.6	A			C5A
	.1601	-.2650	06.83	13.85	004.3	A			C5A
	.1618	-.2644	06.75	13.81	001.4	C			C5A
	.1650	-.2635	06.60	13.75	001.1	C			C5A
	.1670	-.2602	06.52	13.57	003.6	A			C5A
	.1670	-.2643	06.50	13.78	001.1	B			C5A
ABULFEDA J	.1678	-.2658	06.45	13.85	004.0	A			C5A
	.1711	-.2602	06.32	13.55	002.9	B			C5A
	.1711	-.2618	06.31	13.63	002.2	B			C5A
	.1715	-.2690	06.25	14.00	003.6	A			C5A
ABULFEDA O	.1866	-.2651	05.53	13.73	007.2	A	B4		C5A
ABULFEDA P	.1933	-.2658	05.20	13.73	004.7	A			C5A
	.1939	-.2695	05.15	13.92	001.1	B			C5A
	.1953	-.2646	05.11	13.66	003.2	B			C5A
	.1954	-.2610	05.12	13.48	006.1	A			C5A
	.1981	-.2660	04.96	13.72	003.6	A			C5A
	.2002	-.2678	04.85	13.80	002.5	B			C5A
	.2004	-.2697	04.83	13.90	002.2	B			C5A
ABULFEDA N	.2041	-.2601	04.70	13.39	013.7	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
	.2089	-.2666	04.43	13.70	002.5	A			C5A
	.0219	-.2750	13.52	15.04	001.1	B			C5A
PARROT F	.0243	-.2760	13.40	15.08	021.2	B	C		C5A
	.0308	-.2768	13.08	15.09	004.7	A			C5A
PARROT E	.0371	-.2737	12.79	14.90	021.9	B	B5		C5A
	.0373	-.2791	12.75	15.17	003.6	A			C5A
	.0429	-.2714	12.52	14.75	003.2	A			C5A
	.0489	-.2786	12.19	15.09	003.2	A			C5A
PARROT T	.0697	-.2727	11.21	14.68	008.3	B			C5A
	.0816	-.2742	10.62	14.70	007.2	B			C5A
	.0959	-.2785	09.90	14.85	004.0	A			C5A
	.0960	-.2739	09.92	14.61	002.9	B			C5A
	.0977	-.2789	09.81	14.86	003.6	A			C5A
	.1133	-.2783	09.05	14.75	003.2	A			C5A
	.1215	-.2759	08.66	14.59	003.2	A			C5A
	.1225	-.2780	08.60	14.69	010.1	C			C5A
AIRY P	.1397	-.2723	07.79	14.32	007.5	A			C5A
	.1416	-.2755	07.68	14.47	004.0	A			C5A
	.1489	-.2722	07.34	14.27	003.6	A			C5A
	.1506	-.2736	07.25	14.33	002.2	C			C5A
	.1685	-.2719	06.38	14.16	004.7	B			C5A
	.1941	-.2770	05.10	14.30	003.2	A			C5A
	.1947	-.2735	05.09	14.12	002.9	A			C5A
	.1998	-.2711	04.85	13.97	001.8	B			C5A
ABULFEDA M	.2010	-.2782	04.75	14.33	009.7	A			C5A
	.2080	-.2704	04.45	13.90	002.9	B			C5A
	.2150	-.2787	04.06	14.29	012.2	A			C5A
ABULFEDA F	.2185	-.2767	03.90	14.17	014.4	A			C5A
	.0342	-.2848	12.87	15.48	004.0	A			C5A
	.0393	-.2818	12.64	15.30	003.6	A			C5A
	.0409	-.2835	12.55	15.38	003.2	C			C5A
	.0451	-.2808	12.36	15.22	003.2	A			C5A
	.0703	-.2870	11.10	15.41	017.2	B	A4		C5A
ARGELANDER	.0974	-.2832	09.80	15.08	035.2	A	B4	*6	C5A
	.1078	-.2868	09.27	15.21	004.0	A			C5A
ARGELANDER A	.1130	-.2829	09.04	14.99	010.4	A			C5A
	.1179	-.2828	08.80	14.96	001.4	C			C5A
	.1216	-.2826	08.62	14.93	004.3	B			C5A
	.1354	-.2833	07.94	14.90	002.5	A			C5A
AIRY O	.1394	-.2864	07.73	15.04	005.0	A			C5A
	.1510	-.2826	07.18	14.79	001.4	B			C5A
	.1523	-.2835	07.11	14.83	001.1	B			C5A
ABULFEDA E	.1685	-.2868	06.30	14.92	006.5	A			C5A
ABULFEDA A	.1791	-.2815	05.81	14.60	014.7	A			C5A
	.1882	-.2860	05.34	14.79	002.9	A			C5A
	.1939	-.2897	05.04	14.95	004.7	B			C5A
	.2030	-.2823	04.63	14.53	002.9	A			C5A
	.2033	-.2853	04.60	14.68	003.6	A			C5A
PARROT O	.0425	-.2900	12.44	15.70	010.8	A			C5A
	.0569	-.2926	11.72	15.76	004.3	A			C5A

CRATER	XI	ETA	X	Y	DIAM	Q	P	RMKS	REG
AIRY A	•1276	-.2912	08.28	15.34	014.0	A			C5A
	•1357	-.2955	07.86	15.52	003.2	B			C5A
	•1424	-.2936	07.54	15.39	003.6	B			C5A
AIRY S	•1557	-.2950	06.88	15.40	006.5	A			C5A
	•1941	-.2928	05.01	15.11	003.6	A			C5A
	•1876	-.3005	05.29	15.53	002.9	A			C5A
	•1744	-.3012	05.93	15.63	006.1	A			C5A
	•1785	-.3016	05.73	15.63	004.0	A			C5A

Special Remarks marked thus * in Main Catalog

- *1. Elliptical
- *2. Boundary uncertain
- *3. Axial ridge; small central peak
- *4. Shallow; low walls
- *5. 1/4 of wall missing
- *6. Central peak
- *7. 40% Of wall missing
- *8. Minor axis diameter given; major axis is 22.3 km.
- *9. Shallow sinkhole, no walls
- *10. Approximately rectangular; walls damaged