EXPLANATION FOR THE PRELIMINARY TERRAIN ATLAS OF THE LUNAR EQUATORIAL BELT

60°W-60°E, 10°N-10°S

BY

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I - MARE

I-A

I-A Mare, Undifferentiated

General Morphology:

Extensive low plains with low, broad ridges, numerous small craters and occasional rills and domes. Benches parallel to the terrae-mare contact are discernable. Locally, long ridges and scarps with moderately low, but abrupt, slopes interrupt the mare surface.

Engineering Characteristics:

Smooth and rough maria can be discerned at one-kilometer resolution.

Smoother Mare -
a. Slope: $\overline{X}_{Ab}$<1.00°; σ_{AL}<1.27°; slope reversal<21.0%
b. Relative relief: no measurements at one-kilometer resolution.
c. Albedo: generally less than albedo for rougher mare (0.060-0.075).

Rougher Mare -
a. Slope: $\overline{X}_{Ab} \simeq$1.00°-1.78°; $\sigma_{AL} \simeq$1.27°-2.30°; slope reversal $\simeq$21.0-26.5%
b. Relative relief: $\overline{X} \simeq$512 meters; $\sigma \simeq$260 meters; mode $\simeq$ 475 meters
c. Albedo: 0.060-0.100, with most typical values between 0,060 and 0.080.

I-B

I-B Mare, Dark

General Morphology:

General character is similar to smoother I-A, but has a higher frequency of domes and rills and a lower density of craters; low broad ridges are prevalent.

Engineering Characteristics:

a. Slope $\overline{X}_{Ab}$<1.00°; σ_{AL}<1.27°; slope reversals < 21.0%
b. Relative relief: no measurements at one-kilometer resolution.
c. Albedo: generally 0.060, but ranges up to 0.075.

II - UPLANDS

II-A

II-A Upland, Plains Areas

General Morphology:

Relatively smooth topography, usually forming plains on terrae marginal to mare; locally occurs as plains on upland or in large depressions, i.e., north of crater Taruntius and east of Sinus Aestuum. In places, these plains are undulating terrain interrupted by low, widely spaced hummocks and elongate ridges. The boundary between II-A and other upland units often appears transitional, so that adjacent units are subdued. Locally, small craters and some elliptical ones are common, as are irregular pits in the Taruntius and Theophilus areas. Albedo and crater density characteristically higher than average mare.

Engineering Characteristics:

a. Slope: (highly variable, due to transitional and apparently onlapping relations with adjacent units.) $\overline{X}_{Ab} \simeq$1.00°-1.70°; $\sigma_{AL} \simeq$1.30°-2.30°; slope reversals $\simeq$21.0-28.5%
b. Relative relief: no measurements at one-kilometer resolution.
c. Albedo: ranges from 0.070 to 0.130, with most typical values between 0.080 and 0.120.

II-B

II-B Upland, Hummocky to Subdued Topography

General Morphology:

Subdued, undulating topography characterized by low hills and intervening depressions two to four kilometers across, with subdued hummocks and small sharp blocks. In Sinus Medii area, hummocks coalesce into somewhat sinuous, crude braided ridges, one to three kilometers wide and three to 30 kilometers long. Ridges commonly trend various points about northwest; locally, ridges may have slightly subdued or convex crests. Irregular, slightly elongate or groove-like pits occasionally occur on inter-ridge plains (Julius Caesar area)

Engineering Characteristics:

a. Slope: $\overline{X}_{Ab} \simeq$1.78°-2.28°; $\sigma_{AL} \simeq$2.27°-2.90°; slope reversals $\simeq$ 26.5-29.5%
b. Relative relief: $\overline{X} \simeq$ 626 meters; $\sigma \simeq$ 281 meters; mode $\simeq$ 375 and 775 meters.
c. Albedo: 0.070-0.110, with most typical range from 0.080 to 0.090.

II-C

II-C Upland, Hummocky Topography with Moderate Local Relief

General Morphology:

Hummocky surfaces overlying older craters and other original relief; local relief is characteristically marked. In certain areas, such as to the north and south of Sinus Medii, II-C areas are regionally tilted. Isolated blocks are common. This unit is generally transitional between upland units.

Engineering Characteristics:

a. Slope: $\overline{X}_{Ab}$>2.28°; σ_{AL}>2.90°; slope reversal >29.5%
b. Relative relief: $\overline{X} \simeq$ 757 meters; $\sigma \simeq$ 402 meters; modes $\simeq$ 525 and 725 meters.
c. Albedo: highly variable; ranges from 0.060 to 0.160 with most typical values 0.090 to 0.130.

II-D

II-D Upland: rough topography with large variations of local relief

and a high incidence of pronounced linear structures

General Morphology:

Most commonly forms rims of high rough terrain bordering larger mare, although large block-like areas of this terrain also occur well within the terrae boundaries; linear structures (lineaments) are common within this terrain type. When marginal to mare, these areas usually are inclined slightly toward mare, although rough upland units with fewer linear structures may intervene between them and mare

Engineering Characteristics:

a. Slope: $\overline{X}_{Ab}$>2.28°; σ_{AL}>2.90°; slope reversal 29.5%
b. Relative relief: $\overline{X} \simeq$746 meters; $\sigma \simeq$455 meters; Mode $\simeq$ 425 meters and 1025 meters.
c. Albedo: ranges from .060 to .160 with most typical range from .090 to .130.

wall or slope, floor peaks - may be distinquished. In larger craters, the rim phenomena, hummocky terrain and radial ridge terrain, are distinquishable. In general, the depth ratio of these craters to those in B category is 3 to 2.

III - CRATERS

III-A

III-A Well-formed craters with or without associated bright rays

General Morphology:

Craters in this group range from ten kilometers in diameter to more than 50 kilometers. Their component terrain features - rim, interior

III-A-1

III-A-1 Wall (interior): undifferentiated

General Morphology:

Generally small craters where the detailed morphology of the walls cannot be discerned at one kilometer resolution.

Engineering Characteristics:

a. Slope: generally greater than 35 degrees.
b. Relative relief: range as a function of crater diameter:

Diameter	$\overline{X}$
0-10 km.	920 meters
11-20 km.	1662 meters
21-30 km.	2487 meters
>31 km.	3125 meters

c. Albedo: generally high on these slopes; ranges from 0.100 to 0.160, with most typical range from 0.120 to 0.130.

III-A-1a

III-A-1a Wall (interior): terraced or scalloped walls or

detached blocks of wall material; well-developed talus

General Morphology:

Interior walls of craters on which either faults or slump produce very rough, irregular slopes, which are either step-like or terraces. Fragmented debris from dust size to large blocks apparently form talus which is deepest and thickest in basal portion of slopes.

Engineering Characteristics:

a. Slope: slope slightly more gentle than III-A-1.
b. Relative relief: similar to III-A-1 but values for the larger diameter typical for III-A-1a.
c. Albedo: generally high on these inner slopes; brightest spots on full-moon surface are inner wall of craters. Albedo ranges from .100 to .160, most typical range from .120 to .130.

III-A-1b

III-A-1b Wall (interior): moderately smooth

General Morphology:

Interior walls of craters on which slopes are smooth though standing at high angles.

Engineering Characteristics:

a. Slope: similar to III-A-1 values.
b. Relative relief: similar to III-A-1 values for smaller diameter craters.
c. Albedo: ranges from .100 to .160; most typical range from .120 to .130.

III-A-2

III-A-2 Floor: undifferentiated

General Morphology:

At limit of one kilometer resolution, floor apparently smooth, but detailed characteristics indeterminate.

Engineering Characteristics:

a. Slope: no measurements presently available, but appear similar to rougher mare.
b. Relative relief: no measurements presently available.
c. Variable from 0.080 to 0.160 with typical range from 0.120 to 0.130.

III-A-2a

III-A-2a Floor: smooth areas of generally limited extent

General Morphology:

Crater floor varies from smooth or flat to slightly hummocky; in craters larger than 16 kilometers, the surface may be partly hilly.

Engineering Characteristics:

a. Slope: no measurements presently available, but appear similar to II-A.
b. Relative relief: no measurements presently available.
c. Albedo: crater floors of this type vary from moderate to bright, depending on surface materials. Albedo ranges from .080 to .160, with most typical range from .120 to .130.

III-A-2b

III-A-2b Floor: hummocky morphology

General Morphology:

Crater floors with hummocky surfaces apparently due to poorly-sorted debris containing scattered large blocks; in craters over 16 kilometers in size, floor terrain may be hilly and highly complex; some of these floors may be domes.

Engineering Characteristics:

a. Slope: similar to lower II-B values.
b. Relative relief: similar to lower II-B values.
c. Albedo: commonly moderately high due to brecciated and hummocky materials. Albedo ranges from .080 to .160. with most typical range from .120 to .130.

III-A-2c

III-A-2c Peaks: generally located at or near

the center of the floor

General Morphology:

Rugged peaks in center of crater, commonly in craters with rim diameter greater than 10 kilometers. Shapes vary, but tend to be elongate with irregular outline. Peaks may be single or a composite of several peaks along an elongate axis. Surfaces appear extremely rough and extremely steep-sided in some cases.

Engineering Characteristics:

a. Slope: generally greater than 35 degrees.
b. Relative relief: highly variable.
c. Albedo: moderately high to high.

III-A-3

III-A-3 Rim: undifferentiated

General Morphology:

Well-formed craters in which telescopic resolution does not permit determination of detailed morphology on rims of larger craters.

Engineering Characteristics:

a. Slope: highly variable, ranging from values similar to rough mare to values typical for upland, II-B.
b. Relative relief: highly variable, ranging from no discernable relief at one kilometer resolution to a maximum of $\overline{X} \simeq 579_M$ and $\sigma = 267$. Relative relief as a function of crater diameter is illustrated by the following ranges:

Diameter	$\overline{X}$
10-20 km.	550 meters
21-30 km.	767 meters
>31 km.	780 meters

c. Albedo: moderate to high, rarely very low where rims are dark materials. Albedo ranges from .060 to .150; most typical range from .100 to .120.

III-A-3a

III-A-3a Rim: hummocky topography,

generally proximal to the rim crest

General Morphology:

In larger, well-formed, craters, hummocky terrain occurs near the crest of the rim, usually consisting of rough, irregular hillocks and hummocks. Blacks and angular materials of large size contribute to the roughness of the surface of this terrain.

Engineering Characteristics:

a. Slope: variable, but similar to uplands II-B and II-C.
b. Relative relief: similar to higher values for III-A-3.
c. Albedo: moderate to moderately high. Albedo ranges from .060 to .150 with most typical ranges from .100 to .120.

III-A-3b

III-A-3b Rim: topography consisting of radial ridges

and troughs, distal to hummocky area on rim

General Morphology:

Ridges arising from hummocky crest area, which are high and well-defined, but diminish in height away from crater to become anastomosing low ridges which gradually merge with bands of ray materials; inter-ridge grooves which are marked near the crest line gradually decrease in depth and widening until they grade into inter-ray areas.

Engineering Characteristics:

a. Slope: similar to roughest mare or upland, II-B.
b. Relative relief: similar to lower II-B range.
c. Albedo: tends to be moderately high but variable in the brighter ranges. Albedo ranges from .060 to .150; most typical range is from .100 to .120.

III-B

III-B Modified craters, generally of subdued form:

Includes large and small craters whose rim and inner wall

slopes are smoothed and not readily distinquishable

General Morphology:

Includes large and small craters whose rim and inner wall slopes are smoothed and not readily distinquishable. Dominant type of terrain on map carries label; secondary, underlying, type indicated in parenthesis. In general, these types of craters, with diameters ranging from 10 to 50 kilometers, have denths which are spproximately 2/3 that of III-A craters of the same diameters.

III-B-1

III-B-1 Wall (interior): undifferentiated,

but generally smooth

General Morphology:

Topography appears smooth to rough or hummocky; primarily possible composite of landslide, slump or finer extra-crater debris.

Engineering Characteristics:

a. Slope: generally less than 37 degrees from rim crest to floor; one kilometer slope data not presently available.
b. Relative relief: highly variable; following values illustrate range as a function of diameter:

Diameter	$\overline{X}$
0-10 km.	856 meters
11-20 km.	1353 meters
21-30 km.	1321 meters
>31 km.	2250 meters

c. Albedo: varies widely on inner wall slopes of any one crater, but, in general, ranges from .110 to .130.

III-B-2

III-B-2 Floor: undifferentiated

General Morphology:

Crater floors whose detailed morphology cannot be determined at one kilometer resolution; may vary from shooth to hummocky, depending primarily on their relative location on either mare or terrae. In general, smooth, rather flat, floors occur in craters less than 16 kilometers in diameter; floors in larger craters vary from partly flat and hilly to hilly; surfaces commonly appear subdued.

Engineering Characteristics:

a. Slope: similar to rougher mare topography and more variable than III-B-2a.
b. Relative relief: no measurements presently available.
c. Albedo: low to moderate, but lacks any wide contrast laterally.

III-B-2a

III-B-2a Floor: smooth areas generally within large,

markedly deformed, craters on upland

General Morphology:

Smooth, gently rolling, areas located within large, markedly deformed craters, frequently show subdued and rounded forms.

Engineering Characteristics:

a. Slope: $\overline{X}_{Ab}$ - 1.00°-1.20°; σ_{AL} - 1.50°-1.83°; slope reversal - 22.0%-24.0%.
b. Relative relief: no measurements presently available.
c. Albedo: usually low to moderate, with local contrasts in reflectivity low.

III-B-2b

III-B-2b Floor: rough, marked by

slump blocks, hummocks

General Morphology:

Scattered hummocks and clusters of hummocks and some flat surface areas. Difficult to determine whether topography represents original or buried morphology.

Engineering Characteristics:

a. Slope: variable from values similar to II-B to III-B-2a.
b. Relative relief: measurements not currently available, but relief appears similar to lower II-B values.
c. Albedo: similar to III-B-2a, but subject to more abrupt lateral variation, due to hummocks and blocks on the surface.

III-B-2c

III-B-2c Peaks: centrally located; relative relief

above crater floor is generally less than those of III-A-2c unit

General Morphology:

Rugged pinnacles with surface probably composed of large blocks with finer debris interstitial or in some places masking rough spots.

Engineering Characteristics:

a. Slope: steep slopes, generally greater than 15 degrees.
b. Relative relief: no measurements available at the present time.
c. Albedo: high to moderate.

III-B-3

III-B-3 Rim: subdued, hummocky topography:

on small craters, this topography cannot be fully resolved

General Morphology:

Hummocky topography near crest to subradially lineated morphology on the flanks. Flank areas may be partially inundated by mare material.

Engineering Characteristics:

a. Slope: variable due to modification processes and effects of underlying topography, but generally similar to II-B.
b. Relative relief: range as a function of crater diameter:

Diameter	$\overline{X}$
10-20 km.	400 meters
21-30 km.	562 meters
>31 km.	525 meters

c. Albedo: moderate to high with low local contrast, but sharp lateral gradations. In other places, albedo low to moderate with rims cut by faults and lineaments.

III-C

III-C Crater Fields and Craters: two kilometers or less in diameter

General Morphology:

Small, relatively shallow craters; rims low or lacking, usually elongated by about 1.5:1 or 2:1; commonly a composite of two rounded craters. Clusters of this type crater usually occur around very large ray craters and lie on rims of the latter. Locally round, elliptical or irregularly shaped craters; in places small, steep-sided cones are topped by crater (Julius Caesar area). Engineering characteristics not readily measure at one kilometer resolution.

IV - LINEAR FEATURES

(includes arcuate and elliptical features)

IV-A

IV-A Ridges, both linear and sinuous, located within the mare

General Morphology:

Mare ridges are generally of two types: (1) linear ridges which are long, continuous and straight, and (2) sinuous ridges which vary from relatively simple curved types to intricately interlocking and bifurcating systems. Craters occasionally occur along the ridge crest; axial trenches are less common. Locally, the crest-lines are sharp; ends are commonly tapered, but in some places may join highland topography.

Engineering Characteristics:

a. Slope: generally similar to rougher mare; $\overline{X}_{Ab} \simeq$ 1.00°-1.78°; $\sigma_{AL} \simeq$ 1.27°-2.30°; slope reversal: 21.0%-26.5%. Slope frequency distributions are commonly bimodal.
b. Relative relief: variable; $\overline{X} \simeq$ 462 meters.
c. Albedo: similar to surrounding mare.

IV-B

IV-B Domes: craters indicated where resolvable at

approximately one kilometer; some domes appear rough-textured

at the limit of telescopic resolution

General Morphology:

Domes, symmetrical to elliptical in shape, generally occur in groups or may be imposed singley on arcuate ridges. The size range within any group is fairly consistent. Large domes have low, smooth slopes and are low in proportion to width; some small domes show irregularities on slopes and commonly are higher in proportion to width.

Summit craters, small and large, are present on some of these domes; in places a number of small craters are present on the flanks. Rarely, a dome will exhibit a cleft along the crest, or one trending downslope from a small crater at the upslope end.

Engineering Characteristics:

a. Slope: variable depending on the dome morphology and characteristically bimodal algebraic slope frequency distributions.
b. Relative relief: variable depending on the dome morphology; $\overline{X} \simeq$ 558 meters.
c. Albedo: ranges from .050 to .060 for domes in western mare, while those in Mare Imbrian area range from .060 to .080.

IV-C-1

IV-C-1 Rills (Rima): linear in mare or upland;

generally bounded by clearly-defined walls

General Morphology:

Relatively straight or gently curved narrow trenches, bounded by steep to precipitous walls which, in some places, appear to be fault scarps; locally, small craters are present within the trench. In some rills, floor surfaces are rough, due to talus blocks formed by landslides on walls; in others the floors are smooth.

Engineering Characteristics:

a. Slope: steep; no measurements presently available.
b. Relative relief: highly variable; no measurements presently available.
c. Albedo: generally high on walls, but bottoms may be similar to surrounding terrain.

IV-C-2

IV-C-2 Rills (Rima): Sinuous; generally in upland;

commonly originate in crater and in places terminate

in small bifurcating rills.

General Morphology:

Narrow, irregular channels or trenches, with meandering pattern; channels are steep walled, in places vertical. In a few instances, small craters are located within the trench, or may occur at the upslope end of the trench; some rills bifurcate at downslope terminus into several small, shallow rills.

Engineering Characteristics:

a. Slope: highly variable, no measurements presently available.
b. Relative relief: highly variable; no measurements presently available.
c. Albedo: generally higher than surrounding terrain.

IV-D

IV-D Plateaus: bounded by escarpments; usually within mare

General Morphology:

Broad, apparently flat, areas which rise above general elevation of mare; may be bounded by escarpments, or, in some places, by mare ridges. Commonly, plateaus are located within mare ridge systems or may be marginal to terrae areas, with one edge against terrae and with mare ridges or escarpment outlining margin overlooking mare. No detailed engineering characteristics presently available.

IV-E

IV-E Escarpments (Rupes)

General Morphology:

Laterally continuous, rather abrupt, slopes of varying lengths: some slope angles are low, others are precipitous, usually slopes mark the margin of areas either of higher or lower relative relief, but may outline margin of a sharply uplifted and tilted area. Barbs on symbol point downslope. No detailed engineering characteristics presently available.

IV-F

IV-F Trench:

General Morphology:

Broad depressed areas with well-defined and extensive floors; surrounded by escarpments; negative relief. No detailed engineering characteristics presently available.

IV-G

IV-G Depressions: irregular or with ill-defined boundaries

General Morphology:

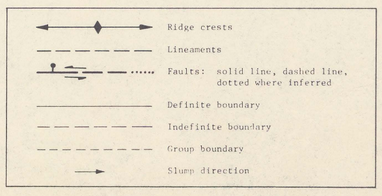
Irregular in plan, though in places tend to be linear; walls are abrupt in areas of new larger craters (III-A types) but may be subdued and gently sloping elsewhere. Depressions in general located most commonly on crater rims or in rougher upland areas. No engineering characteristics presently available.

IV-H

IV-H Chain craters

General Morphology:

Chains of craters aligned in straight or slightly arcuate groups. Individual craters may overlap slightly, but chain arrangement obviously lacks continuous straight bordering walls, such as are present in rills. Occur in swarms on the slopes of very recent craters such as Copernicus and Langrenus; on other less recent craters such as Agrippa, chain craters are common, but not in swarms. Lineaments are commonly marked by chain craters, particularly in the sculptured highlands (at high resolutions). No detailed engineering characteristics presently available.



INTRODUCTION

Attention has been focused on the Moon's equatorial belt (lat 10° N.--10° S.; long 60° W.--60° E.) because NASA selected this region for exploration by unmanned spacecraft. In the fall of 1963, the U.S. Geological Survey began detailed analysis of the terrain of the region, using the best observational data then available from Earth-based sources. The results of these preliminary analyses were reported by McCauley (1964) and Rowan and McCauley (1966).

Terrain analysis--study of landforms, their slope, type of surface, and areal distribution--is especially difficult when directed toward the Moon because of the great distance and generalized nature of source data. The present study attacked the problems inherent in the analysis by proceeding in the following manner: First, terrain units were defined and delineated by qualitative analysis of the lunar terrain displayed in telescopic photographs from the photograph collections of various observatories (Kitt Peak, Mt. Wilson, Pic du Midi, etc.) or by direct lunar observation at telescopes in Kitt Peak or Mt. Wilson Observatories. Next, east-west slope components within these units were measured by the photoclinometric technique (Rowan and McCauley, 1966), and relative-relief data derived by the shadow-measurement technique of Kopal (1962) for each unit were obtained from the Aeronautical Chart and Information Center (ACIC, U.S. Air Force, St. Louis, Mo.). These two types of data were then statistically analyzed; the end result is that each qualitatively determined terrain unit is identified by statistical values unique to it.

The terrain units were plotted on 1:1,000,000-scale shaded-relief maps (LAC charts) prepared by ACIC. Six maps, each covering 20° x 20° areas, were compositied from the 14 LAC charts that span the lunar equatorial belt.

TERRAIN DESCRIPTION

The terrain of the lunar equatorial belt is as varied as that of any other area of the Moon. Mare (I) and terra (II)--the two fundamental morphologic types (see list of terrain units, below)--are each predominant in a particular part of the belt: mare in the west, and terra in the east. Superposed on both are two other morphologic types: cra- (III) and linear features (IV), such as ridges, rilles, domes, faults, and fractures.

Several general characteristics distinguish mare from terra. Mare commonly appears to be lower in altitude than terra. The relief and reflectivity (albedo) of mare surfaces are characteristically low; locally albedo is extremely dark. Superposed linear features gives character to their low relief. Terra, in contrast, is rugged, complex, and bright (high albedo). Linear features superposed on it are more conspicuous than those on mare. It can be subdivided into four units, as follows: Terra plains, unit II-A, are common at mare-terra boundaries, but also occupy (1) structural basins deep within terra regions and (2) the floors of large highly modified craters. Although morphologically similar to mare, the unit has a higher albedo range and larger numbers of superposed craters. Hummocky terra, unit II-B, widely distributed around Mare Imbrium, has relatively few of the linear ridges and troughs that characterize the remaining terra units--II-C and II-D. Local relief is moderate in II-C areas, pronounced in II-D areas. Among the superposed features, two main crater types are recognized: (1) III-A, fresh, well-developed craters, with or without bright rays, and (2) III-B, modified subdued craters. Craters 2-20 km in diameter can generally be classified only as III-A or III-B because of the 1-km resolution limitation on the photography used for study. However, morphologic subunits are distinguishable in III-A and III-B craters more than 20 km in diameter. Craters less than 2 km in diameter are too small for classification; those mapped are designated III-C (undifferentiated craters). Eight types of linear features are distinguished: ridges, domes, rilles, scarp-bounded plateaus, escarpments, troughs, depressions, and chain craters. Locally, one of these types may dominate either major terrain pattern and thereby affect surface roughness, or it may be a distinguishing feature of a terrain unit, for example II-D.

The following is a list of all the terrain units of the lunar equatorial belt:

I - MARE
- I-A, regional.
- I-B, dark.

II - TERRA
- II-A, plains areas.
- II-B, hummocky to subdued topography.
- II-C, hummocky topography with moderate local relief.
- II-D, rough topography with large variations of local relief and a high incidence of pronounced linear structures.

III - CRATERS
- III-A, well-formed craters with or without associated bright rays.
  - III-A-1, wall (interior): undifferentiated or features undeterminable.
    - III-A-1a, terraces or scalloped walls or detached blocks of wall material.
    - III-A-1b, moderately smooth wall.
  - III-A-2, floor: undifferentiated.
    - III-A-2a, smooth floor of generally limited extent.
    - III-A-2b, hummocky floor.
    - III-A-2c, peaks, generally centrally located.
  - III-A-3, rim: undifferentiated; features undeterminable.
    - III-A-3a, hummocky topography, generally proximal to the rim crest.
    - III-A-3b, topography of radial ridges and troughs, distal to hummocky area on rim.
- III-B, modified craters, generally of subdued form.
  - III-B-1, wall: generally smooth.
  - III-B-2, floor: undifferentiated; features undeterminable.
    - III-B-2a, smooth floor areas generally within large markedly deformed craters on terra.
    - III-B-2b, rough floor, marked by blocks and irregular terraces; hummocky.
    - III-B-2c, peaks, centrally located; height above crater floor is generally less than that of III-A-2c peaks.
  - III-B-3, rim, subdued, hummocky topography; on small craters, this topography cannot be fully resolved.
- III-C, craters 2 km or less in diameter; in places in groups (crater fields).

IV - LINEAR FEATURES
- IV-A, ridges, both linear and sinuous, commonly located within the mare.
- IV-B, domes, some have small summit craters barely resolvable at 1-km resolution; some domes appear rough textured at the limit of telescopic resolution.
- IV-C, rilles (rima).
  - IV-C-1, linear, occur in either mare or terra; generally have clearly defined walls.
  - IV-C-2, sinuous; generally occur in terra but also along mare margins; commonly originate in crater; and some terminate in small bifurcating rilles.
- IV-D, plateaus, bounded by escarpments; generally within mare.
- IV-E, escarpments (rupes).
- IV-F, troughs.
- IV-G, depressions, irregular or with ill-defined boundaries
- IV-H, chain craters.

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MAPS CONSULTED

Lunar Geologic Maps, U.S. Geological Survey, scale 1:1,000,000 unless otherwise indicated

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Air Force Chart and Information Center
Lunar Charts, scale 1:1,000,000

LAC 56--Hevelius
" 57--Kepler--2d ed., May 1962
" 58--Copernicus--2d ed., April, 1964
" 59--Mare Vaporum
" 60--Julius Caesar
" 61--Taruntius
" 62--Mare Undarum
" 74--Grimaldi
" 75--Letronne--2d ed., June, 1962
" 76--Riphaeus Mountains
" 77--Ptolemaeus
" 78--Theophilus
" 79--Colombo
" 80--Langrenus