INTEGRATED SLOPE DISTRIBUTION MAP OF THE LUNAR EQUATORIAL BELT

(PRELIMINARY EDITION, JULY 1964)

SELENOGRAPHIC CONTROL

The slope measurements were made along east-west traverses on two Mt. Wilson-Pease Series plates, the approximate scale of which is 1:0,500,000. The actual slope values were plotted on a lunar mercator grid at a scale of 1:500,000. The grid was originally derived from the LAC series of the Aeronautical Chart and Information Center, U.S. Air Force.

GENERAL INFORMATION

Plates 3,4,5, and 6 represent a classification of approximately 14,000 individual slope components measured in the east-west direction. The technique is limited to measurements of alternate 3/4 kilometer segments. The class value however, for each particular measurement was extended one half the distance to the next measurement both horizontally and vertically. The sample interval is 1.5 kilometers horizontally and approximately 10 kilometers vertically. The classification technique employed here is similar to that used to show distribution on mine valuation maps. It is generally considered to be a convenient and statistically reliable technique for the presentation of areal distribution patterns.

The 0° to .7° slope category generally represents segments of the lunar surface which are essentially smooth at the limit of resolution. The technique, however, integrates slope for 3/4 kilometer segments and in certain cases, as at the lip of a crater, the effect of smaller elements dipping in one direction cancels the effect of the opposite slope and yields a zero reading for the inflection point.

The 0.8° to 3.7° sample interval represents a terrain which is generally uneven in texture with a median slope frequency value of about 2°. Within these areas some smooth terrain does exist but this category is statistically unfavorable for the presence of extensive smooth areas.

The plus 3.8° slope category generally represents very rough terrain comparable in slope frequency distribution, at this scale, to such rough terrestrial areas as the San Juan Mountains of Colorado or the Sierra Nevada Mountains of California. Very few flat, smooth surfaces are probable within these areas.

The shadowed areas which cannot be measured photometrically generally represent terrain whose average slope is greater than the sun angle elevation (distance from the terminator in degreees of longitude) for the sample point. At distances greater than 2° from the terminator the shadowed areas represent slopes sufficiently steep to be classified in either of the two rougher terrain categories.

EXPLANATION

- Areas in which the measurable slope values range from 0° to .7°.
- Areas in which the measurable slope values range from .8° to 3.7°.
- Areas in which the measurable slope values exceed 3.8°.
- Areas which were in shadow on the original plate and in which photometric slope measurements cannot be made.

PLATE 2

U. S. Geological Survey
OPEN FILE REPORT
This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.