THICKNESS OF MARE MATERIAL IN THE TRANQUILLITATIS AND NECTARIS BASINS, R.A. De Hon, University of Arkansas, Monticello, Arkansas, 71655.

The thickness of mare filling materials in the irregular mare basins and the shelf areas of circular mare basins is estimated from partially buried craters similar to the studies of the Lansberg region by Marshall (1). The present analysis of the eastern maria uses improved crater diameter and rim height parameters (2) to obtain average depth of fill in the vicinity of partially buried craters. Thickness estimates in the Tranquillitatis and Nectaris basins provide a basis for isopachus and structural contouring within the basins.

Within Mare Tranquillitatis the average thickness of mare fill is 500 to 600 meters. Maximum accumulation in excess of 1200 meters lies along a broad arc from Lamont, trending northeast to near the crater Jansen. Elsewhere the basin is relatively shallow throughout. The mare fill thickens from the periphery to near 900 meters within the basin with local lenses greater than 900 meters thick within craters. The total volume of materials filling the Tranquillitatis basin is estimated to be 262,000 cubic kilometers.

The Nectaris basin is an incompletely filled multi-ringed basin. The flooded inner basin is filled with at least 1200 meters of material. The maximum thickness in the center of the basin is undetermined but may not exceed 1500 to 1800 meters. Between Mare Tranquillitatis and Mare Nectaris the data reveal a well-defined, deep, narrow trough. This depression is filled with material in excess of 900 meters and attains a maximum thickness of over 1500 meters in the region of the crater Torricelli. The volume of fill within the Nectaris basin and northern trough is approximately 85,000 cubic kilometers.

Sub-basin contours retain much of the form of the surface topography, which suggests that surface elevation errors on the LAC base maps exceed the thickness of fill within the basins. As surface elevation data are improved, reliable subsurface maps will be possible. In general, the data suggest that the irregular maria are flooded by a relatively thin layer of materials. The data provide useful limits to mare fill thickness, and models of mare basalts within the irregular basins which involve thicknesses in excess of 1500 meters should be considered with caution.

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REFERENCES

(1) Marshall, C.H., 1963, Thickness and structure of the Procellarian System in the Lansberg Region of the moon: U.S. Geol. Surv. Astrogeol. Studies, pt A, p. 12-18.

(2) Pike, R.J., 1967, Schroeter's rule and the modification of lunar crater impact morphology: J. Geophys. Res., v. 72, p. 2099-2106.