Table 1. Microscopic Imager Images Used to Collect Lamination Thickness Data for Burns Formation

Sol	Image ID
42	1M131912406EFF05A6P2953M2M1
43	1M132015283EFF05A6P2952M2M1
124	1M139193264EFF2821P2956M2M1
144	1M140976788EFF3190P2916M2M1
310	1M155703832EFF38EVP2977M2M1
310	1M155704624EFF38EVP2977M2M1
310	1M155705230EFF38EVP2977M2M1
310	1M155706235EFF38EVP2956M2M1
310	1M155706610EFF38EVP2977M2M1
310	1M155707293EFF38EVP2977M2M1

[62] The laminar, nodular and massive-bright classes all contain obvious secondary features. Targets in these classes have been placed by *Grotzinger et al.* [2005] in the Burns formation upper unit, and the upper portion of the Middle Unit. Interpretations of specific rock classes are summarized in this section.

4.2.1. Laminar Rock Surfaces

[63] Lower-relief laminae, often emphasized by darker fine sand grains that accumulate in outcrop recesses, may represent less resistant layers. These laminae alternate with the more prominent layers that apparently have higher resistance to weathering and may reflect local variations in cementation. Laminae are in most cases only a single grain thick, consistent with eolian rather than fluvial deposition [*Grotzinger et al.*, 2005]. The size and sorting of individual laminae suggest that they were formed by impact creep (similar to ripples in terrestrial eolian environments) of particles from a local source. *Grotzinger et al.* [2005] suggested that subcritical climbing of eolian ripples formed the millimeter-scale lamination observed in Endurance Crater. Grains are less well preserved at greater depths within Endurance Crater because of secondary cementation [*McLennan et al.*, 2005]: Laminar rocks grade into nodular rocks, providing strong evidence that nodular textures oriented during diagenesis, not deposition. Even where individual grains cannot be recognized, cross-bedding commonly is still visible (Figure 13), indicating transport of sand-sized grains in a bed load.

[64] The observations that laminae have similar thickness and nodules/septa are also similar in size may indicate that these nodules represent individual grains, well sorted and cemented together. The extent of physical weathering could then be determined by the extent to which these resistant grains stand out from the surface. It is not clear why abraded surfaces are so smooth, with no individual grain vacancies (plucked grains) or positive-relief grains remaining. Grain topography appears to be the main source of the overall texture rather than the morphology of the cementing agent, meaning the amount of cementing agent must be low.

[65] The centimeter-scale cross-lamination seen at Overgaard is diagnostic of deposition in flowing water. The

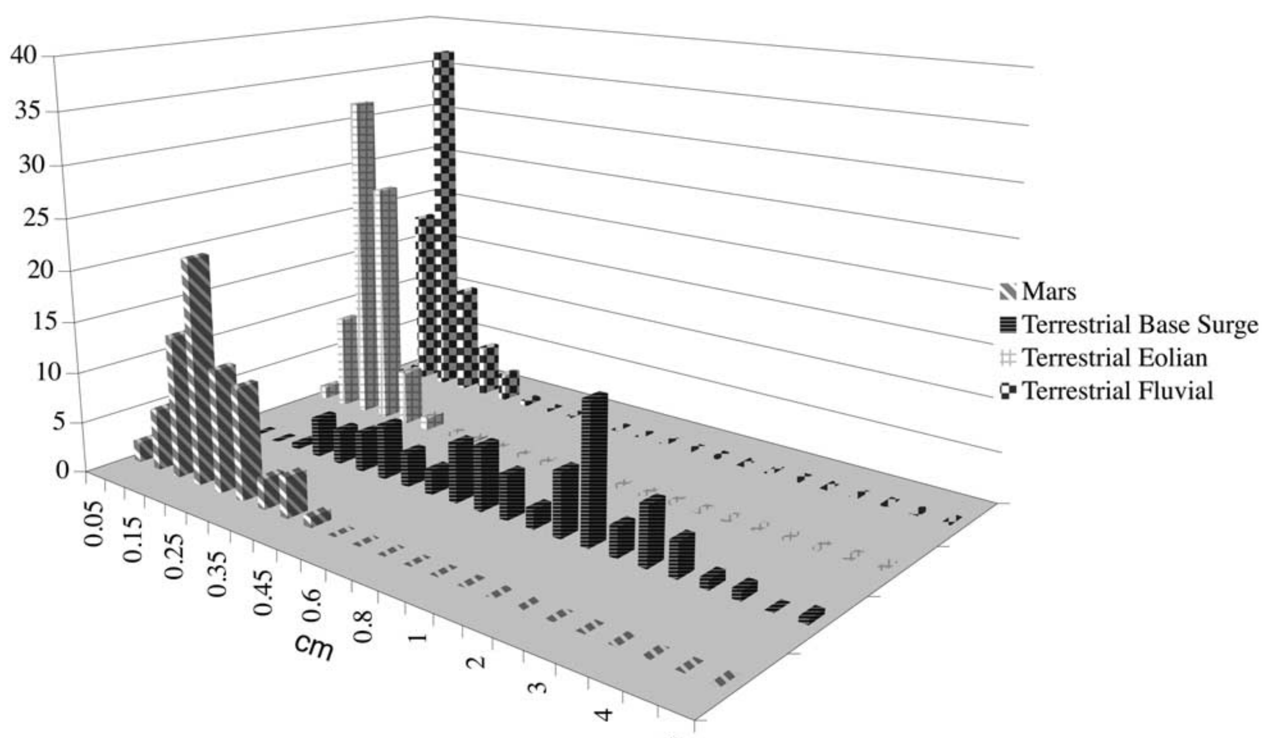

Figure 31. Histogram of lamination thickness in centimeters for Mars (Burns formation), terrestrial base surge (Hunts Hole), fluvial (Mt. Shields formation), and eolian (Page Sandstone) deposits. Note similarity between Burns and terrestrial eolian and fluvial deposits. However, the Burns laminae differ significantly from terrestrial base surge deposits.