



Fig. 6. Detailed morphological analysis of the erosional history of preexisting impact craters (arrowed) cut by the channels indicates that many of the channels are fluvial in origin; see text for discussion. Direction of channel flow in each image is from top to bottom. Viking frames are (a) 86A42–45, (b) 86A38, and (c) 651A20.

channels have cut both the upslope and downslope rims (Figure 6c). By analogy with terrestrial lava flow eruptions [Walker, 1973a], the great lengths of the Hecates channels would require a high lava effusion rate, thus involving large volumes of magma. Craters with just their upslope rims breached by channels (Figures 6a and 6b) fail to show the

expected infilling by this hypothesized lava. Furthermore, craters cut on both upslope and downslope rims (Figure 6c) demonstrate that subsequent drainage of material from within the crater occurred to a level below that of the outflow channel. This last example (Figure 6c) shows no evidence of lava terraces within the crater, and the perched egress