The Snǽbylisheiði unit, SE Iceland, is a ~35 cubic km, flat-topped ridge of hyaloclastite coupled with and intruded by basalt. Its characteristics suggest englacial formation during the last glacial maximum by a large-scale basaltic fissure eruption initiated and evolving under ice. Source deposits lack evidence for a pillow mound or bedrock-ice sill, comprising instead hyaloclastite deposits with basal intrusions of vesicular basalt and higher intrusions of dense basalt. Where these breach the surface of the hyaloclastite, they built un-welded scoria and coarse-ash piles rarely exposed at the ridge’s surface but present in places along ridge margins beneath thinly bedded hyaloclastite containing local, isolated accretionary lapilli beds in its upper layers.

Eruption PHASE 1 was explosive in subglacial meltwater, forming ~150 m of pyroclastic debris in the source area. In PHASE 2 the basal 10-20 m of debris was intruded by vesicular basalt with peperitic margins, which extended the ridge SE, downslope, by adding peperites, apophyses, and hyaloclastite to the accumulated tephra along the fissure source. In PHASE 3, dense basalt intruded and engulfed basal hyaloclastite as high-level intrusions formed bulbous sills, dikes, and mega-pillows of basalt. Intrusion margins have jigsaw textures and/or form peperites with hyaloclastite. In PHASE 4 these intrusions breached the hyaloclastite surface, forming local spatter. PHASE 5 produced isolated beds of accretionary lapilli in upper deposits of the source area, suggesting that explosive eruptions melted through the ice and formed an eruption plume. Though the eruption melted through the ice, no table-mountain-like subaerial lava cap formed.