

Different styles of glaciotectonism during an active retreat of a marine terminating glacier – examples from W-Iceland

T. SIGFUSDOTTIR^{1,2*}, Í. Ö. BENEDIKTSSON² AND E. PHILLIPS³

¹*Department of Geology, Lund University, Sölvegatan 12, SE-223 62 Lund, Sweden (* email: thorbjorg.sigfusdottir@geol.lu.se)*

²*Institute of Earth Sciences, University of Iceland, Sturlugata 7, IS-101 Reykjavik, Iceland*

³*British Geological Survey, Murchison House, West Mains Road, EH9 3LA Edinburgh, UK*

Glacier induced deformation commonly takes place below and in front of oscillating glaciers and ice sheets. Resulting glaciotectonic landforms and structures come in a variety of types and sizes, reflecting the ice dynamics during formation. Therefore, interpretation and analyses of these structures can provide valuable information on the deformation events that created them. The information can be used together with sedimentological studies to reconstruct past dynamics and histories of glaciers and ice sheets.

This study focuses on polydeformed marine sediments exposed in the Belgsholt, Melabakkar-Ásbakkar and Skipanes coastal cliffs in the lower Borgarfjörður area, W-Iceland. These glaciotectonic sequences were formed in Late-Weichselian between c.11,000 and 14,000 cal. yr BP when glaciers advanced off the coast in the area resulting in a large-scale deformation. These formations are now exposed subaerially due to isostatic rebound after the deglaciation.

Documentation of the stratigraphy and structures in the sections has revealed a series of highly deformed zones and ridges, most likely formed during readvances or still-stands as the glacier retreated northwards from its maximum extent. The zones are separated by in-filled basins of stratified and undeformed, marine sediments. Detailed analyses of these zones were performed in order to obtain information about the glacial processes that formed them. These data will be used to construct a model of sedimentological- and deformational processes and placed in context with the regional glacial history. The model may have implications for the subglacial and ice-marginal processes of marine terminating glaciers.