

Estisol Drilling Fluid Handling and Recycling Using a Chips Melter at EGRIP, RECAP, and ABN-North Ice Core Drilling Projects

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For the recovery and reuse of drilling fluid from the chips produced in ice core drilling a melting procedure has been introduced at the EGRIP, RECAP, and ABN projects. The aim is to maximize the efficiency of drill fluid recovery through complete separation of the drilling fluid from liquid water, which would be an improvement over traditional methods relying on centrifugal force for fluid separation from the frozen ice chips. While fluid-water separation using Estisol-140 was straight forward and complete (RECAP and ABN projects), melt separation for the EGRIP drilling fluid mixture of Estisol-240 and Coasol was more problematic. When heated, a small percentage of water remained in solution with the drill fluid, requiring a subsequent refreezing step to remove the last traces of water, and likewise traces of drill fluid remained in solution with the water phase, which were harder to remove. In this presentation we review these experiences, and look ahead to the next deployment of our melt system for the Beyond EPICA-Oldest Ice core project in Antarctica beginning in 2021.

Primary author: COPENHAGEN DRILL GROUP (Niels Bohr Institute)

Presenter: COPENHAGEN DRILL GROUP (Niels Bohr Institute)

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