

# INCREASING THE DRILLING SPEED IN BEOI DEEP ICE CORING BY DRILLING ICE CORES OF UP TO 4.5 METRES IN LENGTH

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Drilling deep ice cores is an undertaking that is rarely carried out, due to the time-consuming nature of such projects. The key contributing factors to the project timeframe are the remote locations with limited access, and the sequential sampling nature of typical coring technologies. The most significant lever that can be influenced is the reduction of travel time between the surface and the increasing depths of the borehole bottom. The total travel duration is only dependent on two factors: the achievable travel speed and the total travel distance within the liquid-filled borehole.

From the outset of the BEOI project, it was agreed that existing EPICA equipment and technology would be reused. This included the winch and its cable, as well as the fundamental shape of the drill. Therefore, the only other option for ensuring that the project's timeframe is achievable is to reduce the total travel distance. This was achieved by extending the core barrel length to 4.5 metres, thereby increasing the totally obtainable ice-core length per run and, consequently reducing, the number of runs required to reach a set borehole length. This presentation will highlight the design differences and outline the resulting challenges experienced during the four-year drilling operations at Little Dome C, where a 2,800-metre-long ice core was drilled.

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