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## U.S. IDP 700 Drill Development

### Content

The U.S. Ice Drilling Program (IDP) Science Advisory Board identified in the IDP Long Range Science Plan 2015-2025 and later, a priority need to envision and develop a drilling operation that is less logistically intensive than the existing Forro 1650 Drill, which recovers 98 mm diameter ice cores to a depth of 1650 m, to be used to retrieve ice cores from 700 m depth at alpine or polar ice coring sites with limited logistics and with two months or less time on site. The overarching goal of the drill design was to achieve a balance between scientific requirements, field season duration, and logistics constraints. To minimize the amount of drilling fluid required, the drill has been designed to recover 70 mm ice cores with potential future adaptation for 64 mm core. To minimize weight, the drill tower is also the central support for the drill tent, and the drill lay-down mechanism has been integrated with the core processing system. To minimize drilling fluid loss, drip trays are an integrated part of the design, a cable vacuum will recover drilling fluid from the winch cable, and a chip melter will provide highly efficient drilling fluid extraction from the ice cuttings. The detailed design has been completed and fabrication is currently in process. In this presentation, the drill design and innovative features will be discussed.

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