

On-going needs for technology development

Last Year Priorities and Progress:

Priority 1:

Complete design, development and testing of the Intermediate-depth drill and infrastructure.

Design and development complete; tests in Greenland this summer.

Maintain and upgrade existing drills for coring up to 400 m depth.

Yes - but perhaps should be modified to 300 (rather than 400m). Drills include hand augers, 2" & 4" electromechanical, 3" electrothermal and 3.25" Badger-eclipse drills.

Continue feasibility studies for a new generation hot-water drill.

Development of modular hot-water drill underway.

Need for an agile shot-hole drill.

Plan for upgrading an agile hot water drill for shot holes is underway.

Continue conceptual and feasibility studies for the RAID drill. Development through DOSECC.

In progress

Last Year Priorities and Progress:

Priority 2 (needed within the next three years):

Develop & build drills for rapid access to the base of ice sheets and ice shelves.

This could be an extension of Priority 1, #3

Continue to develop drilling technologies, methods and protocols for clean drilling into subglacial environments for access and sampling.

Designed successful clean access water treating module used on WISSARD; provisions for the addition of clean access are being made to the modular drill.

Develop the capability of retrieving bedrock samples beneath ice 300- to 1000 m thick. Different projects require access through ice of different thickness.

Concept has been developed; detailed design and construction for use in 2015-16.

Develop and build an agile, clean hot-water drill for creating 5" holes through up to 6-m of sediment-laden lake ice.

- **Not yet started.**

Assess upgrades for the DISC drill that lessen its logistics requirements and ready it for East Antarctic conditions, while maintaining its replicate coring capability.

Feasibility study of what needs to be done planned for FY2015 with modifications complete by 2018; will depend on plans for where the drill will go next.

Last Year Priorities and Progress:

Priority 3 (needed within the next five years):

Build or acquire a lightweight backpack drill (e.g. <http://www.icedrill.ch/>) for shallow coring.

*** Not yet started – should these be University owned drills?**

Construct a jig to support a hand auger to facilitate horizontal coring up to 20 m into ice cliffs.

*** Not yet started.**

Develop and build a drill capable of coring temperate and poly-thermal ice.

*** Not yet started.**

Modify the “blue-Ice” drill to enable large-volume sampling of firn and ice up to 300 m depth.

Modifications made for 200m depths – testing in Greenland this year; additional discussions are needed if depths >200m are required.

Develop and build a drill capable of coring horizontally (or at low angles) several 100 m.

*** Not yet started**

On-going needs for technology development

Last Year Priorities and Progress:

Priority 1:

Complete design, development and testing of the Intermediate-depth drill and infrastructure.

Design and development complete; tests in Greenland this summer.