

# Technology Prioritization Discussion

## From the 2013 Long Range Science Plan:

### **Priority 1 (needed this year):**

Complete Intermediate-depth drill and infrastructure.

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

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

An agile shot-hole drill is needed: agile and capable of drilling 15 holes per day up to 100 m depth in both East and West Antarctica.

Continue work on the RAID drill. This development is happening through DOSECC

## **Priority 2 (needed within the next three years):**

Develop and build modular access drill for holes of different diameters from 500 to 2,500 m depth, modular design that can be helicopter-deployed.

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

Develop the capability of retrieving bedrock samples beneath ice 300 to 1000 meters thick; design should be modular.

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

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

### **Priority 3 (needed within the next five years):**

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

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

Develop and build a drill capable of coring temperate and poly-thermal ice. Modify the “blue-Ice” drill to enable large-volume sampling of firn and ice up to 300 m depth.

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