NSF-Ice Core Facility Questions for the Community Equipment we have available What Would Principal Investigators like to see added

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## NSF-ICF Equipment

The majority of the equipment the NSF has is for the cutting and processing of ice cores. There are a few analytical tools that are kept at the facility as well. These are detailed below.

#### PROCESSING EQUIPMENT

- Saws/tables
  - 1 Horizontal Band saw
  - 5 Vertical band saws
  - 1 Circular chop saw
  - 1 BID chop saw
- Surface planer for ice core

#### ANALYTICAL EQUIPMENT

- Imaging system
- ECM
- Visual stratigraphy station
- Thin section preparation equipment
- Thin section analysis equipment

#### NSF-ICF Processing Equipment Band Saws

#### Horizontal Bandsaw and pull-off trays





Vertical bandsaw and 2m table

#### NSF-ICF Processing Equipment Chop Saws

14 in. dry-cut circular chop saw



#### BID band saw chop saw



#### **NSF-ICF** Processing Equipment

#### Ice Core Surface Planer

The surface planer is used to smooth the cut surface of the ice core for the ECM, imaging system and visual stratigraphy. The planer is owned and operated by the NSF-ICF



- Electrical Conductivity Machine (ECM)
  - The ECM is stored at the NSF-ICF, but is maintained and used by T.J. Fudge from the University of Washington



• Equipment for making and analyzing thin sections

- Leica SM2400 Microtome with stage modified for thin section work.
- Microtome blades, and glass slides for making thin sections



• Equipment for making and analyzing thin sections

• Rigsby stage with polarized lenses for manual analysis of C-Axis fabrics



• Equipment for making and analyzing thin sections

• Digital imaging station for photographing bubble sections.



• Equipment for making and analyzing thin sections

Digital imaging station for photographing thin sections



## NSF-ICF Analytical Equipment Imaging System

A high-resolution scanning system used to scan full meter ice cores



# NSF-ICF Analytical Equipment Imaging System

- The system is built around a BetterLight 6K digital scanning insert.
- The BetterLight scan back utilizes a 6000 pixel x 3 pixel trilinear scanning head.
- The linear core carriage is controlled by the camera control system
- The Scanback is inserted into an Arca-Swiss large format view camera which allows lateral shifting Which allows imaging into the core at an angle without distorting or changing focus





# NSF-ICF Analytical Equipment Imaging System

The Key to a good image is lighting

This image is of ½ round core using a method of "Dark Field" lighting. Side lighting, keeping the light from reflecting off of the back round of the core, over a black background



# NSF-ICF Analytical Equipment Top lighting Line lights Imaging Lighting



#### Light generators



Side Lighting



#### **Bottom Lighting Line Lights**



## NSF-ICF Analytical Equipment Light table in dark booth



The light table is utilized by the physical properties person to examine each meter of ice and note layering, fractures, inclusions, dust layers, etc. in a 1m quad-rule notebook. This station is owned and operated by the NSF-ICF.