

# ICE CORE WORKING GROUP

VIRTUAL MEETING  
FEBRUARY 17, 2022

## IDP OPERATIONS UPDATE

KRISTINA SLAWNY – IDP DIRECTOR OF OPERATIONS

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# TEAM UPDATES

- IDP welcomed Electrical Engineer Umberto Stefanini in January 2022.
  - EE position had been vacant since 2018 and was being filled by contractors with prior IDP experience.
- Field Support Manger Anna Zajicek departed IDP in January 2022 to take a position with Polar Field Services (PFS) as a Science Coordinator.
  - Field Support duties have temporarily transitioned to Slawny.
  - Position Vacancy Listing closed yesterday, 2/16/22.
- Mechanical Engineer Grant Boeckmann is departing IDP in mid-March 2022 to join the Centre for Ice and Climate (CIC) group in Copenhagen, Denmark.
  - Position Vacancy Listing closed on 2/8/22.
  - Great interest in the position – 33 applicants!
  - Applicant scoring in progress.
- Planning to hire 1-2 Mechanical Engineers, as the position vacated by Chris Gibson in January 2021 remains open.



Umberto Stefanini



Anna Zajicek



Grant Boeckmann

# FIELD SUPPORT

- All field work requiring deployment of IDP personnel postponed since February 2020.
- Working with NSF, ASC and PFS to re-plan delayed fieldwork.
- Completed fabrication of a cargo ramp for safe loading and unloading of small aircraft through consultation with Kenn Borek Air.
  - Ramp will be tested on Tunu Glacier in Greenland in spring 2022.
- Planning telecons underway with PFS, ASC and science teams for the following upcoming large field efforts:
  - GreenDrill
  - Herc Dome
  - COLDEX
- Greenland - Pre-season planning meetings in progress with PFS, Joe McConnell and Sarah Das.
- Peru – Pre-season planning meetings in progress with Paul Mayewski for upcoming work on Quelccaya Ice Cap in either April or August. Currently monitoring the State Department travel advisory.
- Currently supporting one project in Antarctica and one in the continental U.S.



IDP Cargo Ramp

PI	NSF Award No.	Location	IDP Equipment
Holland	1739003	Thwaites, Glacier, Antarctica	3" IDDO Hand Auger & Sidewinder
Zoet	2013987	Madison, WI	Chipmunk Drill

# FORO 3000 DRILL



DISC Drill Winch



Foro 3000 Winch



Drill Tent



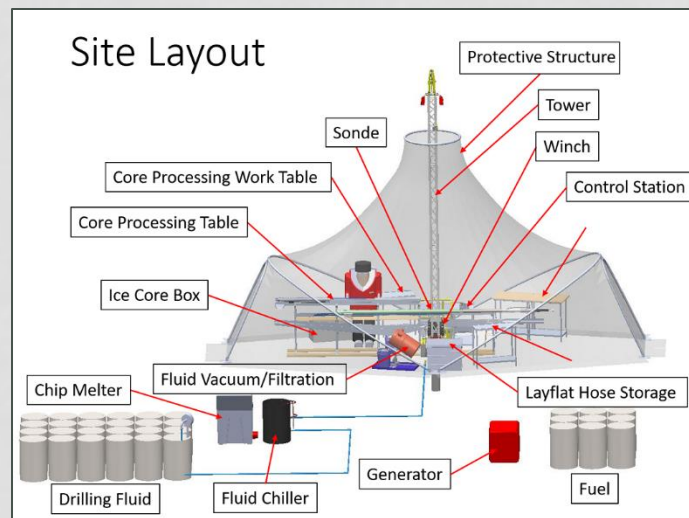
Core Processing Line

- Fabrication nearing completion:
  - Completed fabrication of the sondes.
  - Working to complete the sonde control electronics and control/communications software.
  - Received the power distribution system and wired the power cables.
  - Completed the fluid handling and core processing systems.
  - Completed fabrication of the tower and crown sheave assemblies.
  - Received and assembled the drill tent and control room. Installed control room ventilation.
  - Ordered and received a lift for removing ice core boxes from the core storage trench.
- Dramatic reduction in system weight compared to the DISC Drill.
  - DISC Drill = 120,000 lbs.
  - Foro 3000 = 52,000 lbs. (includes MECC machine shop container)
- Current schedule (subject to change):
  - Complete fabrication/assembly/testing by April 2022.
  - Ship to Port Hueneme in October 2022.
  - Resupply vessel delivers drill to McMurdo in January 2023.

# 700 DRILL

Completion Date	Milestones
June 2016, June 2017	IDP Long Range Science Plans recommend a portable ice coring drill for depths up to 700 m
March 2018	Complete IDP Science Requirements for Foro 700 Drill
August 2019	Complete IDP Conceptual Design for Foro 700 Drill
August 2019	Complete IDP Review of the Foro 700 Conceptual Design
May 2020, updated Jan 2021	Revise IDP Science Requirements from Foro 700 Drill to 700 Drill
Sept 2020	Update IDP Conceptual Design from Foro 700 to 700 Drill
Jan 2021	Complete IDP Review of the 700 Drill Conceptual Design
March 2021	NSF approval of creation of the Detailed Design for the 700 Drill
October 2021	Complete Detailed Design for 700 Drill
November 2021	Complete IDP Review of the Detailed Design
February 2022	NSF approval to begin fabrication of the 700 Drill
March 2022 - March 2024*	Fabricate 700 Drill
March 2024*	Complete 700 Drill Fabrication, Integration Testing & Drill Documentation
April 2024*	Complete Final Review and Acceptance; 700 Drill ready for field testing

\*Estimated

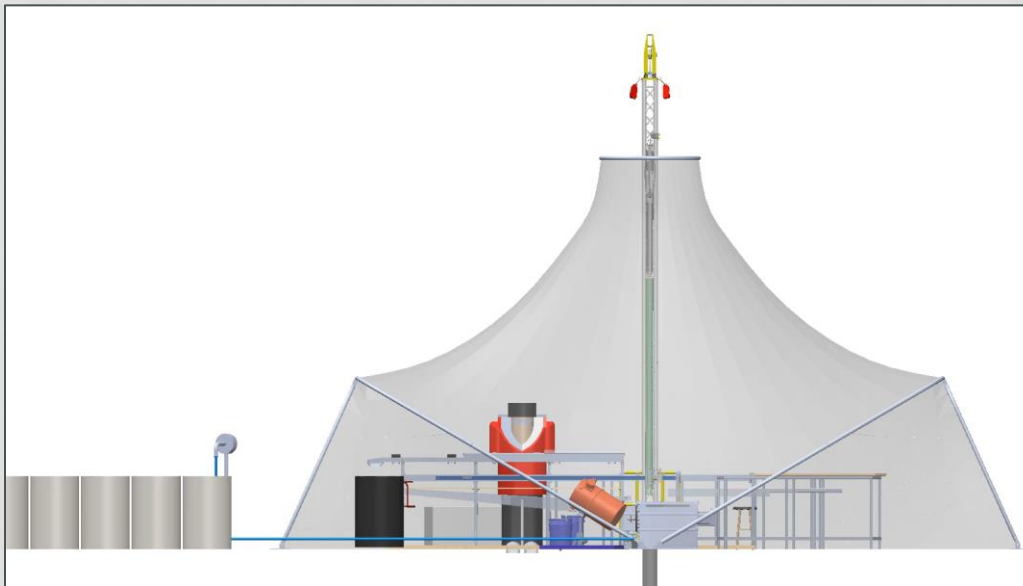


February 17, 2021

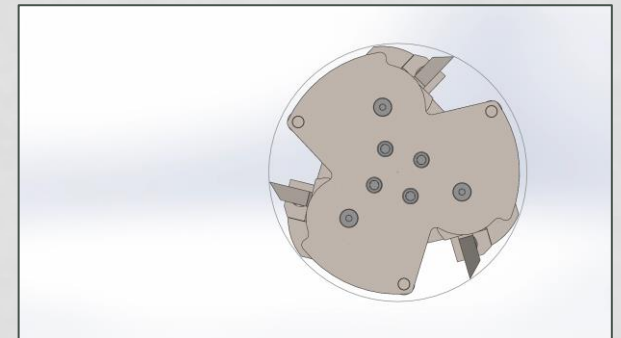
# 700 DRILL

## Incorporating Innovation

- New tilting mechanism to keep the tent size small and remove the need for a trench.
- Articulating Anti-Torque – Exploring a new concept to minimize stick-slip during drilling and improve core quality.



Tilting mechanism



Articulating Anti-Torque

# MAINTENANCE & UPGRADES

- ASIG Drill – Working to ready the system for the GreenDrill project, with shipment of cargo to Greenland planned for summer 2022 and use beginning in spring 2023.
- Foro 1650 – Sonde electronics modification/assembly is in process and will mimic the Foro 3000 design.
- Eclipse Drills – Implemented a Gearhart-Owen cable connection for easier servicing in the field. Continuing to update CAD models and drawings.
- Thermal Drill – Tent modifications made. Fabricated a hole cleaner and a vacuum test fixture.
- Foro 400 – Compiled a cost estimate to fabricate barrels for wet drilling in response to a PI inquiry.
- Stampfli Drill – Received/inspected a spare anti-torque/motor section. Re-terminated the winch cable. Fit checked IDP cutter heads and parts. Designed and fabricated a cutter grinding fixture.
- Logging Winches – Spooled on a new IDLW cable and terminated both ends. Tightened Amphenol backshells. Purchased a tool bag.
- Hand Augers – Purchased and installed new cords for the SideWinder drills. Purchased new cases for the variacs. Finalized carbide cutter design and obtained quotes. Fabricating additional Sidewinder platforms.
- Winkie Drill – Ice bit fabrication and other maintenance completed. Discussed extending the Winkie Drill to 200 m depth versus exploring purchase of an off-the-shelf Hydracore Prospector rig.

# FUSION WELDER TESTING

## JANUARY 2022

### UW PHYSICAL SCIENCES LAB - STOUGHTON, WI



- Planned and executed casing fusion welder testing in a freezer at the UW Physical Sciences Lab in early January 2022.
- Testing conducted at  $-20^{\circ}\text{C}$  and  $-40^{\circ}\text{C}$  with excellent results.
- Planned casing sections are 15 ft. in length to minimize the number of welds required.





# DRILL TESTING/OPERATOR TRAINING JANUARY 2022 LAKE WAUBESA - MADISON, WI

- Operations training and system shakedown conducted on 1/21/22.
- Subsequently disassembled the system down to the smallest components possible for transport via horse, mule and porter during the upcoming Peru project.



Tentipi Tent  
• 48lbs  
• 36"x16"x16"



Winch Spool  
• 93lbs  
• 20"x20"x20"



February 17, 2021

THANK YOU!

DISCUSSION