ICE CORE WORKING GROUP
VIRTUAL MEETING
FEBRUARY 17, 2022
IDP OPERATIONS UPDATE
KRISTINA SLAWNY – IDP DIRECTOR OF OPERATIONS
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 Manager 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.
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.

<table>
<thead>
<tr>
<th>PI</th>
<th>NSF Award No.</th>
<th>Location</th>
<th>IDP Equipment</th>
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</thead>
<tbody>
<tr>
<td>Holland</td>
<td>1739003</td>
<td>Thwaites, Glacier, Antarctica</td>
<td>3&quot; IDDO Hand Auger &amp; Sidewinder</td>
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<tr>
<td>Zoet</td>
<td>2013987</td>
<td>Madison, WI</td>
<td>Chipmunk Drill</td>
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FORO 3000 DRILL

• Fabrication nearing completion:
  o Completed fabrication of the sondes.
  o Working to complete the sonde control electronics and control/communications software.
  o Received the power distribution system and wired the power cables.
  o Completed the fluid handling and core processing systems.
  o Completed fabrication of the tower and crown sheave assemblies.
  o Received and assembled the drill tent and control room. Installed control room ventilation.
  o 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.
  o DISC Drill = 120,000 lbs.
  o Foro 3000 = 52,000 lbs. (includes MECC machine shop container)

• Current schedule (subject to change):
  o Complete fabrication/assembly/testing by April 2022.
  o Ship to Port Hueneme in October 2022.
  o Resupply vessel delivers drill to McMurdo in January 2023.
### 700 DRILL

<table>
<thead>
<tr>
<th>Completion Date</th>
<th>Milestones</th>
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<tbody>
<tr>
<td>June 2016, June 2017</td>
<td>IDP Long Range Science Plans recommend a portable ice coring drill for depths up to 700 m</td>
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<tr>
<td>March 2018</td>
<td>Complete IDP Science Requirements for Foro 700 Drill</td>
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<tr>
<td>August 2019</td>
<td>Complete IDP Conceptual Design for Foro 700 Drill</td>
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<tr>
<td>August 2019</td>
<td>Complete IDP Review of the Foro 700 Conceptual Design</td>
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<tr>
<td>May 2020, updated Jan 2021</td>
<td>Revise IDP Science Requirements from Foro 700 Drill to 700 Drill</td>
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<tr>
<td>Sept 2020</td>
<td>Update IDP Conceptual Design from Foro 700 to 700 Drill</td>
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<tr>
<td>Jan 2021</td>
<td>Complete IDP Review of the 700 Drill Conceptual Design</td>
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<tr>
<td>March 2021</td>
<td>NSF approval of creation of the Detailed Design for the 700 Drill</td>
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<tr>
<td>October 2021</td>
<td>Complete Detailed Design for 700 Drill</td>
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<tr>
<td>November 2021</td>
<td>Complete IDP Review of the Detailed Design</td>
</tr>
<tr>
<td>February 2022</td>
<td>NSF approval to begin fabrication of the 700 Drill</td>
</tr>
<tr>
<td>March 2022 - March 2024*</td>
<td>Fabricate 700 Drill</td>
</tr>
<tr>
<td>March 2024*</td>
<td>Complete 700 Drill Fabrication, Integration Testing &amp; Drill Documentation</td>
</tr>
<tr>
<td>April 2024*</td>
<td>Complete Final Review and Acceptance; 700 Drill ready for field testing</td>
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*Estimated
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.
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°C and -40°C with excellent results.
- Planned casing sections are 15 ft. in length to minimize the number of welds required.
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.

Winch Spool
- 93lbs
- 20”x20”x20”

Tentipi Tent
- 48lbs
- 36”x16”x16”
THANK YOU!

DISCUSSION