PROJECT SITUATION REPORT
DISC Drill 2012-13 Season

Project: T-350-M
Project Principal Investigator: Dr. Charles Bentley
Report No. 12 **for period:** 1-27-13 **through:** 2-3-13

IDDO PERSONNEL ONSITE:
Patrick Cassidy
Kristina Dahnert
Dave Ferris
Jason Goetz
Josh Goetz
Mike Jayred
Jay Johnson
Nicolai Mortensen
Elizabeth Morton
Tanner Kuhl

ACTIVITIES DURING PERIOD

- Borehole cleaning operations resumed on Sunday afternoon using a 6 screen, 2-meter core barrel and coring head configuration in order to try and core the chip pack at the bottom of the borehole. The drill touched off at 3392m, 13 meters from the bottom of the borehole, but after approximately 30cm of penetration, the WOB started to climb. Payout was stopped, causing the WOB to slowly decrease, but the cutter torque continued to climb steadily. This appeared to indicate that we were not having luck coring the chip pack and that the drill was binding in the borehole. As this was beginning to resemble a situation in which the drill could become stuck in the borehole, the motor hand-off was done while both the cutter and pump were still running. The two motors were then stopped and then the 'core break' was immediately performed. Cable tension at core break was recorded at 36,000 N, indicating the drill was indeed beginning to stick in the hole. Upon returning to the surface, patches of refrozen chips were observed on the outside of the coring head, in the wrench notches on the core and screen barrels, and the step in barrel diameters just above the head had ice built up on it. There was also a 10cm chunk of refrozen chips in the end of the core barrel. The core barrel was filled with mostly slush, however, there were also several chunks of refrozen chips.
- Additional cleaning runs were completed down to 2000 meters depth, as the majority of chips were thought to be congregating several hundred meters above that depth and around the deviation areas, as seen by previous borehole videos. A slow feed rate of 0.3 m/s was used and only a light coating of very fine chips were recovered in the screens.
- A cleaning run was completed with the 10 micron filter sock installed in the bottom three screens. Traveling at a feed rate of 0.1 m/s down to 400m and then

at 0.3 m/s down to 2000m, only a small amount of material was brought back in the filter sock.

- A borehole camera run was then completed. The camera was lowered at 0.05 m/s through deviation areas 2, 3, 4 and 5. The first deviation was not filmed as excellent footage had already been captured from that depth. The camera was then actuated into deviation #5 and lowered a few meters. The fluid clarity is generally very good, except when passing a deviation where it is cloudy and thus good footage on the final camera run was not obtained.
- One final attempt was made to clean the bottom of the borehole on Monday, 1/28/13. The original DISC Drill barrels were run in an 8 screen and 2-meter core barrel configuration. As the drill approached 2490m, it began to bind in the borehole due to borehole closure. Reaming of the hole was performed for several meters before Chief Scientist Don Voigt made the decision that these efforts would be in vain given the distance remaining to the bottom of the borehole and the days remaining for our fieldwork. With the added risk of sticking the drill using other configurations, we concurred with his decision to halt borehole operations at this time.
- Packing operations were initiated on Monday, 1/28/13, and the Chief Scientist was given the opportunity to cut the drill cable from the drill sonde.
- The first four carpenters arrived from McMurdo on Monday, 1/28/13 to begin taking down town buildings.
- Nicolai Mortensen departed WAIS Divide on Monday, 1/28/13.
- The drill sonde was removed from the drill tower, disassembled and the sections were taken to the MECC for drying.
- Packed the replicate coring barrels and heads
- Packed the computer rack and the Glassman high voltage rack
- Brought the borehole fluid level up to 146 ft (44.5m) meters on Monday, 1/28/13
- Emptied and cleaned the centrifuge collection tank and the fluid mixing tank
- Emptied both bulk fluid tanks
- Packed the air monitor
- Retrieved the fluid transfer pumps and other fluid handling equipment for return to Madison
- Removed the tower drip pans and rollers
- Packed the blue sonde crate
- Packed the winch motor crate with the FED vacuum, the Tiger vacuum, the core saw and other miscellaneous components
- Packed the winch cabinet crate
- Packed two smaller Hardigg cases with replicate drill parts and sonde component cases
- Disassembled and packed the barrel turning fixture
- Took a drill fluid inventory; remaining fluid includes 58 full drums of Isopar K as well as one partial drum and 11 full drums of 141b as well as one partial drum.
- Removed and packed all winch cables
- The Arch Jamesway was taken down on Tuesday, 1/29/13
- Organized the orange shipping container and installed the DISC Drill screen and core barrels along the container walls for transport back to Madison

- Disassembled the centrifuge frame
- Disassembled and packed the screen cleaning system
- The Science rack tent in town was taken down on Wednesday, 1/30/13
- Removed the crown sheave and the upper and lower tower sections
- The borehole fluid level was again checked on Wednesday, 1/30/13. It had dropped approximately five feet down to 151 ft (46m).
- Nicolai Mortensen departed MCM on Wednesday, 1/30/13
- Removed the tower actuator
- Packed the MECC machine shop
- Completed final organizing in the arch
- The borehole fluid level was again checked on Thursday, 1/31/13 and was found to be at 152 ft (46.3m)
- Two pallets of replicate ice core, containing all ice core drilled this season departed WAIS Divide on Thursday, 1/31/13, and arrived safely in McMurdo.
- The remaining nine drillers onsite (Cassidy, Dahnert, Ferris, Goetz, Goetz, Jayred, Johnson, Kuhl, Morton) departed WAIS Divide on Friday, 2/1/13, as originally scheduled, arriving in McMurdo at 3:00am on Saturday morning.
- All sleep kits were returned to the BFC on Saturday, 2/2/13
- Returned Comms equipment on Saturday, 2/2/13
- Attended the McMurdo All-Hands meeting in the Galley from 3:30-4:30pm on Saturday, 2/2/13

SAFETY

- NA

COMMENTS
(Problems, Concerns, Recommendations, Etc.)

- Thank you again to everyone who has made not only this season, but this entire project successful. Here's to a successful end to another great field year. Cheers!