PROJECT SITUATION REPORT
DISC Drill 2012-13 Season

Project: T-350-M
Project Principal Investigator: Dr. Charles Bentley
Report No. 11 **for period:** 1-20-13 **through:** 1-26-13
Prepared by: Kristina Dahnert **Date:** 1-27-13

IDDO PERSONNEL ONSITE:
Patrick Cassidy
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Dave Ferris
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Josh Goetz
Mike Jayred
Jay Johnson
Nicolai Mortensen
Elizabeth Morton
Tanner Kuhl
Linda Morris (IDPO – departed WSD)

ACTIVITIES DURING PERIOD

- A combination borehole camera and dummy logging tool run was completed for deviation #4 on Sunday, 1/20/13. The tool passed the deviation area with ease and only a 16N change in WOB was observed.
- Nicolai completed repairs on the instrument section L base plate.
- Deviation #4 was completed on Tuesday, 1/22/13, at a drillers depth of 2000.203 meters. A total of 48.203 meters of core were collected from this deviation.
- Milling operations were immediately started on deviation #5. This is the same location in which deviation #2 was started, so we are able to forego broaching operations and utilize the notch already formed during deviation #2.
- Mill/broaching hybrid operations were performed from a depth of 2409 meters and down to 2412 meters. When poor cutting was encountered, the stroke length was then increased by one meter at a time, beginning at 2408 meters and then at 2407 meters. Prior to initiating milling with shoes, we were looking to see an inclination change of 0.7° over the 4 meter stroke length.
- All six actuator arms were thoroughly cleaned and the force settings calibrated for each arm.
- Mill/broaching operations continued, though only light cutting was observed. The final inclination change recorded at 2412 meters was 1.17°, which gives a notch depth of 102mm. As the LVDT's on two of the lower arms were reading 33 counts by the end of the run, the shear pins were replaced on these arms. They were found to be more than half sheared.
- Milling with shoes operations were initiated on Wednesday, 1/23/13.
- The first core of deviation #5 was collected on Thursday, 1/24/13, with a 2 screen and 1-meter core barrel configuration, however the crescent at the bottom of the

core was narrower than the crescent at the top. At this point, we returned to milling with shoes. Since the coring drill had not been able to tilt all the way over onto the previous ledge created by milling, a small ledge remained with which to continue milling with shoes. Milling was continued down to the depth from which the first core had just been recovered. This technique proved successful at moving the high side wall over.

- A second coring run was then completed with a 2 screen and 1-meter core barrel configuration. The core was found to be full diameter right from the start. The screens were, however, empty as chunks of ice in the hole may have interfered with the check valve flaps, allowing the flaps to remain open during ascent and thus causing the chips to be dumped back into the borehole.
- A third screen was subsequently added to the drill configuration to allow for collection of longer cores, up to one meter in length. Coring of deviation #5 continued using this configuration.
- Difficulty was again encountered with the crown sheave, reminiscent of the issues observed during the 2009-2010 season. The crown sheave began making a clicking noise during ascent operations and upon inspection, three of the six screws that mount the bearing hub to the sheave were found to have sheared off. The sheave was removed and six new screws were installed. The noise is no longer heard.
- Two drums of 141B were added to the bulk fluid tank. The Isopar-K tank is still ¼ full. If any additional fluid is needed for this season's operations, it will be brought into the Arch by individual drums.
- Linda Morris departed WSD on Friday, 1/25/13.

*****The final core of deviation #5 and of the 2012-2013 season was collected on Saturday, 1/26/13. Final depth of the deviation was 2428.74 meters.*****

- Borehole cleaning operations were initiated. The first configuration consisted of the original DISC drill screen barrel with 10 screens and the DISC Drill conical tool. As this barrel has a more snug fit in the borehole than the smaller diameter Replicate Coring barrels, it was utilized to capture the most chips possible from the hole. The drill was lowered at 0.3 m/s in the narrow section of the borehole, which starts at 1530 meters when the DISC Drill was originally changed from a 170 mm diameter borehole to the smaller kerf 164 mm diameter borehole. The first cleaning run was completed at a depth of 3392 meters, when the drill would not penetrate any further. 8.5 screens of chips were recovered.
- Saturday was a day off for 2nd and 3rd shifts. 1st shift will have off on Sunday, 1/27/13.
- Borehole cleaning operations will continue into the beginning of next week and packing operations will begin. Drillers will begin leaving WAIS Divide early this week, with the majority of the crew returning to McMurdo around Friday, 2/1/13.

SAFETY

- Nothing to report

COMMENTS
(Problems, Concerns, Recommendations, Etc.)

- WAIS Divide has turned windy and cold this week, reminding us it is time to start packing up. On Wednesday, 1/23/13, the winds picked up overnight and visibility dropped to less than ¼ mile. While the winds have fluctuated and the sun makes an appearance once in a while, there is fair amount of digging and cleanup being performed around the Arch whenever possible.
- A steak and lobster dinner was enjoyed by all of camp on Saturday night, 1/26/13, to celebrate the conclusion of replicate coring as well as a great season overall at WAIS Divide. Kaija Webster, our camp manager, put together a nice photo slideshow from pictures taken throughout the season. This was enjoyed by all after dinner.