

PROJECT SITUATION REPORT DISC Drill 2011-12 Season

Project:	T-350-M				
Project Principal Investigator:	Dr. Charles Bentley				
Report No:	11	for period	1-22-12	through	1-31-12
Prepared by:	Jay Johnson			Date:	2-1-12

IDDO Personnel Onsite:	Josh Goetz Mike Jayred Elizabeth Morton Chuck Zander Chris Gibson Jay Johnson Nicolai Mortensen Steffen Bo Hansen (Departed WAIS on 1/23/12)
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ACTIVITIES DURING PERIOD

- Steffen departed WAIS on Monday.
- Finished drying and packing the Eclipse drill.
- Started working two shifts on Monday.
- Gave a tour of the arch to Julie Palais (NSF), Sonia Esperansa (NSF), and Lindsay Powers (RPSC). They visited WAIS Monday on a turnaround flight.
- Designed and fabricated a helical shoe for our face mill cutter. The idea is that once a ledge is established in the wall the helical shoe will continuously control the axial feed of the cutter. Therefore, by being able to place weight on bit we can eliminate stick slip. The challenge thus far is we have not been successful at creating a good ledge to set the shoe on.
- The new fiber optic transceivers arrived on Monday. The new parts were installed and tested. The system was first tested with a 1m fiber optic lead and then connected to the drill cable. There was no noticeable loss in picture quality over the 4.1km cable.
- On Tuesday we ran the camera down the borehole. The first few hundred meters were cloudy and then the clarity improved. We took video of several sections of the borehole including the deviation we are working on and the bottom. The low side of the hole has a thin layer of chips clinging to it. We were able to verify that we have started a deviation and that it is orientated on the high side of the hole.
- Wednesday evening the drive for one of the arms on the upper actuator (actuator D) locked up. It looks to be a failure of the motor or gear reducer, because everything looked fine electrically. A different actuator section was swapped in.
- We are continuing to refine a set of cutting parameters and methods that result in successful cutting.

- Replaced the failed gear motor in actuator D so we have back-up actuator section.
- The coring head was attached directly to the pump, no screen section, to try and find or create a step in the borehole wall. None was found or created.
- Attached the milling head with face mill directly to the pump, no screen section, to try and find or create a step in the borehole wall. None was found or created.
- Seven drill runs were completed between Thursday morning and Friday evening. Each drill run consisted of up to 7 milling passes in the deviation zone.
- On Friday evening a chip collection and vacuuming run was done. The 10 micron fabric filter was put in the screen section to improve collection of fine particles. A second run was done on Saturday morning. A total of five screens full of chips were recovered.
- Friday night the temperature logging tool was lowered down the borehole to verify it can pass by the deviation zone without getting hung up. The cable tension never varied by more than 3 lbs. There was no problem passing the temperature logging tool by the deviation.
- On Saturday night the logging winch was packed.
- Saturday afternoon the camera was deployed down the borehole. The drill fluid clarity was not good due to all the activity in the borehole. The camera was left at 2800m overnight to monitor the fluid clarity. The clarity improved some overnight and the video logging run was completed on Sunday morning. The notch in the bore wall was noticeably deeper than when the camera was run on Tuesday.
- On Saturday afternoon the fluid level was measured and brought up to 36m (the fluid level was not measured after raising). On Sunday morning the level was checked again and found to be 42.6m. This means either was a measurement error was made or the casing leaks. The fluid level was checked a few times throughout the day and measured the same each time. On Sunday evening fluid was again added raising the level to 36.3m. The level was again checked on Monday morning and found to have dropped 0.5m to 36.7m overnight.
- Drilling operations were completed on Sunday morning and packing began.
- The weather was poor on Sunday morning and degraded to condition 2 by afternoon so we focused on packing indoors.
- The weather on Monday started out decent, but turned to condition 2 during the afternoon, and then improved again in the evening.
- The 150hp winch motor was removed and packed for return to Madison. The front bearing on the motor sounds dry even though it has received its regularly scheduled maintenance.
- Packed the MECC on Monday and it was moved to winter storage in the evening.
- All packing was completed by Monday evening.
- The remaining seven of us departed WAIS on Tuesday evening at 9:00pm.

**SAFETY
COMMENTS**

- (Problems, Concerns, Recommendations, Etc.)**
- Tested the fire alarm system
 - The 225kw generator was shut down for the season on Monday afternoon.
 - We will be shipping the winch control cabinet home. There were a few instances where the computer and manual winch control lost control of the small winch motor while milling the deviation. The e-stop had to be used to stop the winch each time.
 - As discussed above, the casing appears to leak somewhere between 37and 43m