



PROJECT SITUATION REPORT DISC Drill 09-10 Season

Project:	T-350-M				
Project Principal Investigator:	Dr. Charles Bentley				
Report No:	6	for period	12-14-09	through	12-20-09
Prepared by:	Kristina Dahnert			Date:	12-21-09

ICDS Personnel on Site:	Kristina Dahnert Jay Johnson (left WSD Friday, 12/18/09) Elizabeth Morton Dave Ferris Nicolai Mortensen Lou Albershardt Steve Polishinski Patrick Cassidy Josh Goetz Robb Kulin Ben Gross
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ACTIVITIES DURING PERIOD

- Everyone remained on 1st shift on Monday. Each new member of our crew rotated through the control room along with a crew member from a previous season. We drilled three cores, all over 2.5m. The first two runs were done using .179" height rear button shoes. The last run was done using .175" shoes for a more aggressive cut.
- Tuesday and Wednesday we started two shifts. First shift consisted of the normally-scheduled 1st shift, plus Jay and Krissy. Second shift was a combination of the six others scheduled for the upcoming 2nd and 3rd shifts.
- Started using the thin kerf core barrel with .165" rear button shoes and the new J1 cutter head. These shoes proved to be too aggressive and over-heated the cutter motor. Core length was 1.490m on the first run with this barrel.
- 0.186" shoes were tried next. Penetration was slow at 2.15mm/s, but core length was 3.127m.
- 0.181" shoes were tried to increase penetration a bit and resulted in a 2.75-2.85mm/s penetration speed. Core length was 3.171.
- Pump speeds have ranged from 2500rpm-3000rpm. We are running the pump while tripping down hole and have achieved a descent speed of 1.0m/s.
- We have successfully increased winch ascent speeds to 1.5m/s, however due to misaligned end wraps during cable spooling, we need to slow down to 0.5m/s at the end of each wrap. This problem should correct itself when we complete this last misaligned wrap (~300m).
- New, shorter anti-torque blades were installed to access the thin kerf barrel hole. Hole diameter is now 163mm down from the original 170mm. Blades are being adjusted accordingly, as they seemed to be tight in the borehole leading to a

stick-slip situation during descent and penetration.

- Tested new two-stage pump. Temperatures on this pump run about 10°C higher than the single-stage pump, but it too was run at 2500rpm during descent. Core length of 3.369m was achieved. While the core lengths were between 3.3-3.5m with this configuration, there were no obvious indications that the new pump was causing the increased core length. After two more shifts, we returned to the single-stage pump. This reduces pump temperature and torque significantly.
- A drift issue with the Weight on Bit (WOB) sensor was discovered during two runs mid-week. While we were still able to drill a core using the tension reading, Anti-torque section A was swapped in for Anti-torque B. The WOB sensor in section A is functioning well.
- The second cutter head for the thin kerf barrel (J2) was installed. Jay machined the core dog cages for both 'J' heads to allow more clearance with the borehole wall. We now have a variety of shims available for the core dog cages to adjust our clearance to the borehole wall as necessary.
- Thursday was our first day of three shifts. The first shift of Elizabeth, Lou and Steve runs from 7:00am-3:30pm. The second shift of Patrick, Dave and Robb runs from 3:00pm-11:30pm. The third shift of Nicolai, Josh and Ben runs from 11:00pm-7:30am.
- Tested the new screen fill tubes for two runs. The chips were still wet, and not anymore densely packed in the upper screens. These tubes proved troublesome to clean and did not increase core length. They are no longer in use.
- Due to the tightness of the drill in the borehole, we have been starting the cutter during descent, around 40m from the bottom. A small amount of reaming can be seen on the cutter current during this time.
- We have been stopping payout 1-2 times during coring due to heating of the cutter motor. As the temperature approaches 50°C, we stop the winch and allow the pump to cool the cutter as the drill starts to free-hang. This leaves a small opaque and a small shiny band on the core, but does not affect core quality per core handler feedback.
- Our current and most stable drill configuration consists of the single-stage pump and the thin kerf core barrel with .181" rear button shoes. We can occasionally drill to a delta depth of 3.50m of core before the pump current descends or a cutter becomes packed, however we have typically been coring 3.2-3.3m each run, so as not to pack the cutters and over-current the cutter motor. This is still a 0.5-0.6m increase in core length in comparison to last season.
- Jay made a tool for use in removing the screen valve. It works well in removing the valve that fits tightly in one of the screen barrels.
- Fluid mixing has begun. The fluid level in the borehole is being kept between 90-110m.
- A problem occurred when using the fluid catch valve to obtain a sample of the borehole fluid. This was likely caused by a 3.473m core and a packing of the screens, which seems to be too much when using this valve. Thus, all of the chips flowed back into the borehole. This resulted in a subsequent vacuuming-only run, with no core collected. Dave reports that borehole density is right where it should be.
- On Friday night, we said goodbye to Jay as he left on the 8:30pm flight. He spent one night in McMurdo, one night in Christchurch and one night in Sydney before returning home on the 21st. We thank him for all of his hard work and

direction in getting us up and running and we will miss him! Thank you, Jay!

- On Saturday, the camp celebrated a great week with a beach-themed party. A good time was had by all!
- On Sunday, it was our turn for house-mousing. Sundays are a bit more involved than other days, as those assigned need to heat up the lunch and dinner meals in addition to the normal mousing tasks. Every shift was able to participate and a great job was done by all. Sunday also included the 2nd annual WAIS Divide Coffee House, a time when people can show off their various talents of singing, playing instruments, etc.
- Sunday was an extremely productive day for both 2nd and 3rd shift (1st shift's day off). A total of nine runs were completed!
- Final driller's depth for the week: -1631.167. Total meters drilled this week: 113.833.

SAFTEY

- The startup checklist was completed. This includes startup tasks for RPSC, NICL and ICDS.
- Elizabeth continues to complete the daily and weekly safety checks. No issues have been witnessed during these checks.
- The NICL air monitor has been registering a 'Trouble' alarm since a power recycle. Krissy and Brian will work to resolve this issue. If the monitor is still in distress, one line from the DISC Drill monitor will be used on the NICL side during operations. This line is already in place under the floor from the 2007-08 season.
- John, an RPSC electrician, has been upgrading the Arch fire alarm system with cold weather-rated equipment. This work should be completed shortly and pull stations were tested late in the week. The smoke alarm in the control room was also tested.

COMMENTS

(Problems, Concerns, Recommendations, Etc.)

- Happy Holidays, Everyone!