PROJECT SITUATION REPORT
DISC Drill 08-09 Season

Project:	T-350-M				
Project Principal Investigator:		Dr. Charles Bentley			
Report No:	6	**for period**	12-29-08	**through**	1-04-09
Prepared by:	Jay Johnson			**Date:**	1-04-09

ICDS Personnel on Site:	Kristina Dahnert Jay Johnson Bill Mason Paul Sendelbach John Robinson Patrick Cassidy Elisabeth Morton Dave Ferris Bill Neumeister Nicolai Mortensen Tanner Kuhl

ACTIVITIES DURING PERIOD

- A total of 198.994m were drilled this week. The final bore hole depth as of 12:00AM Monday was 1017.314m
- WAIS Camp celebrated New Years on New Years Eve. Second shift took the 31th off. First and third shifts took the 1st off.
- A number of us worked on New Years day doing maintenance and a few repairs to the drill. The following four items were worked on New Years day. Thank you to everyone who volunteered part their day off to help with the maintenance!
- On Monday the crown sheave started making a loud clicking sound when loaded over 10,000n. Until we were able to take it apart on New Years Eve, we kept the line tension below 10,000n while tripping. Bill M, John, and I started the repair on Dec 31st and finished it on Jan 1. The bearings didn't look bad, but the three of the six 10-24 screws that mounted the bearing hub into the sheave were broke. The 10-24 screws were upgraded to ¼-28's and a back up ring was added under the screw heads to they don't bear directly on the plastic of the sheave. This is the same modification that was done to the level wind sheave when the level wind was rebuilt in Madison. The only other thing I found wrong was one of the bearing bores was .002 undersized. This was enough to cause the new bearing to bind. I remachined the bore to the proper fit. The sheave is now running quietly.
- Tanner replaced the grease seal in the pump. We had to add grease to the pump after every run where it should be able to go for a couple of runs. The seal was completely worn out. The new seal only held for a few runs most likely because the pump shaft has a score in it from when the last seal failed.

- Krissy and Elisabeth cleaned the slot drip pans. Bill N. was the slot attendant.
- John, Paul, Bill N, and I repaired the barrel lifting fixture. The fixture had been run into its hard stops twice which severely bent the main beam. We were able to straighten the main beam with a hydraulic jack and some heat. We then welded in gusset plates to stiffen the damaged area. Finally, to prevent this from happening again, we adjusted the hoist limit switches to limit the travel of the crane hooks.
- Nicolai finished modifying the wiring for the fluid handling system. Using the circulation pump to pull fluid from the bulk tanks is working very well. The pump is able to increase the flow enough to make the flow meters work properly.
- Installed new female connectors on the core barrel and both screen barrels. The threads on the old connectors had worn so they were over tightening.
- Tried running the new style rear shoes. I decided to try these shoes to compare drilling stability with the front shoes. The shoe height was set to theoretically give a 5mm pitch. We ran the cutter head at 80rpm with a feed rate of 4-5.5mm/s. As soon as the cutters touched down the cutter current was all over the place, the accelerometers were showing a lot of action, and the weight on bit was climbing rapidly. We tried to adjust the feed rate to get things to settle down, but after about 10cm of drilling the cutter motor over currented and shut down. We tried coring a second time and got the same results. The run was aborted and we brought the drill up. The front shoes were put back on and drilling returned to normal.
- I made a set of .002” thick shims for the font shoes. With them the shoe height is .196”. Adding these shims changed the penetration rate from 5.5mm/s to 4.3mm/s and smoothed out fluctuations we were seeing in the cutter current. Core quality did not seem to change.
- Over the past week we checked the bore hole fluid density a couple of times. One of the samples was taken using the modified valve which does not allow fluid to escape the screen barrel while tripping. The other samples were taken during normal drill runs by collecting fluid draining from the core barrel when the drill is brought horizontal. All samples came out with a density of .920 at -31°c. We have been mixing fluid to a density of .935 at -31°c.
- Over the past couple of days we have been getting mostly three dog core breaks. It is always the same dog that doesn’t catch. We have tried replacing just the one dog as well as installing an entire new set and the problem still persists.
- The surface finish of the cores continues to be very good, however many of the core have at least one crack or spall in them as they come out of the barrel. You can often hear the cores crack in the barrel without anyone touching it. Many times cores also crack or spall as we push them in the barrel or as they just sit on the receiving tray. We are close to or at the peak of the brittle ice zone.

COMMENTS
(Problems, Concerns, Recommendations, Etc.)