



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 1 **for period** 1-22-08 **through** 11-30-08

Prepared by: Jay Johnson **Date:** 11-30-08

ICDS Personnel on Site: Kristina Dahnert
Jay Johnson
Bill Mason
Paul Sendelbach
John Robinson

ACTIVITIES DURING PERIOD

- The five of us left Madison on Saturday Nov 22nd and arrived in Christchurch on Monday the 24th.
- We had our clothing issue on Tuesday.
- Our flight to MCM was scheduled for Thursday because the previous flight hadn't flown yet and it was full.
- The Wednesday flight got canceled and therefore the Thursday flight got bumped as well.
- On Wednesday I received notification that I was being added to the full flight and I ended up flying to MCM on Thursday.
- Friday's flight got canceled due to weather and MCM is observing Thanksgiving on Saturday, so Krissy, Bill, Paul, and John are stuck in CHC until next week.
- I have not had an in brief yet because RPSC was planning on having it for all five of us at once. However, I have gone ahead and met with individuals from the different work centers to get things rolling.
- On Friday I inventoried the gear we requested from the BFC, began packing some items, and built my sleep kit.
- I have scheduled pickup of the requested radios and Iridium phone for Monday.
- Sharon Lewis was not in on Friday, so I wasn't able to review the cargo status with her, but it looks like the cargo we sent this year is all here.

COMMENTS
(Problems, Concerns, Recommendations, Etc.)



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 2 **for period** 12-01-08 **through** 12-06-08

Prepared by: Jay Johnson **Date:** 12-06-08

ICDS Personnel on Site: Kristina Dahner, WAIS 12-4
Jay Johnson, WAIS 12-3
Bill Mason, WAIS 12-3
Paul Sendelbach, WAIS 12-5
John Robinson, WAIS 12-3
Patrick Cassidy, MCM 12-2
Elisabeth Morton, MCM 12-2
Dave Ferris, MCM 12-2
Bill Neumeister, MCM 12-4
Nicolai Mortensen, MCM 12-4

ACTIVITIES DURING PERIOD

- Patrick, Elisabeth, and Dave arrived in MCM on 12-2
- Nicolai and Bill N. arrived in MCM on 12-4
- Bill M., John, and myself flew to WAIS on 12-3
- Krissy flew to WAIS on 12-4
- Paul flew to WAIS on 12-5
- Re TCN'ed cargo for delivery to WAIS
- Packed requested BFC gear and radio's
- Built sleep kits
- By weeks end all of us have attended Snow School Refresher (Snow School for Bill N.), Snowmobile Safety, and Environmental Awareness for everyone accept Bill N. and Nicolai.
- The Drilling equipment looks like it wintered over well, however we haven't tried starting any of it up yet. The arch floor has heaved more in the center, but it is still workable. The side walls on the drill arch have bowed inward which in turn has moved the floor and put a curve in the crane rails. We may have to realign one or both of the rails so the crane will operate properly. We will know for sure once the cranes are operational next week.
- Set up the MECC
- Relocated the chip blower and started installing the new duct work
- Started replumbing the fluid handling system

COMMENTS

(Problems, Concerns, Recommendations, Etc.)

The winch would have been running by now so upgrades to control software could be implemented and tested while the rest of the drill system was brought back on line; however The MCM cargo system has not been sending out our cargo according to the priority listing we gave it. In fact all of the other cargo has arrived ahead of the winch cabinet and one other priority one crate. These two pieces of cargo are scheduled for Monday's flight. I have not gotten an answer as to why things are so far out of order. The end result of this will be a one to two day delay in the start of drilling.



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 3 **for period** 12-08-08 **through** 12-14-08

Prepared by: Jay Johnson **Date:** 12-14-08

ICDS Personnel on Site:

Kristina Dahnert
Jay Johnson
Bill Mason
Paul Sendelbach
John Robinson
Patrick Cassidy
Elisabeth Morton
Dave Ferris
Bill Neumeister
Nicolai Mortensen

ACTIVITIES DURING PERIOD

- Patrick, Elisabeth, Bill N., and Dave arrived at WAIS on Tuesday.
- Reinstalled the winch power cabinet and control room computers. The winch powered up without any problems.
- Assembled the upper sonde and connected it to the cable. Anti-torque section "A", instrument section "J", and motor section "X". The gray fiber in the anti-torque section optical slip ring was found to be bad. We switched over to the spare fiber in the slip ring and everything ran fine on the bench. Once the drill was on the tower the computer reported intermittent problems communicating through the fibers. Rotating the fiber optic slip ring caused the problem to come and go, so Monday we will be swapping in a different anti-torque section.
- Realigned the tower with the bore hole. The tower base needed to be shifted about 1" towards the control room. The sonde rollers did not need realigning. The barrel connections went together smoothly.
- Installed the balancing valve for the tower hydraulic system and tuned it. The tower has a slight chatter at one speed when tilting vertical, but not near as bad as it was in Greenland. The tower moves smoothly when tilting horizontal.
- The ground fault protection circuit for the Glassman is randomly tripping. Nicolai is working on trouble shooting this.
- Installed the crown sheave drip pan.
- Finished installing the new duct work for the chip blower. We will be using the old chip hopper for the start of drilling because the Cat 953 loader is still down.
- On Saturday we ran the drill down the bore hole and touched off the bottom. Paul reports finding the bottom to be within .1m of last season's final depth. He was unable to verify it with higher accuracy because the WOB sensor was not

- working due to the communications problem with the fibers.
- The fluid level in the bore hole is still at 75m! There was no change in the fluid level over the winter. This means the ice to casing seal is fluid tight at this time.
 - Finished plumbing the fluid handling system.
 - Modified the wiring in the fluid handling batch controller to control the solenoid valves added this season.
 - Replumbed the barrel pumps so they can be used to fill the bulk fluid tanks.
 - Plumbed the bulk fluid tanks, filled them with drilling fluid, and connected them to the fluid handling system.
 - Powered up both cranes and tested them.
 - The drill side of the arch is about 3" narrower at its mid point than it was last season. With this much floor movement we had to move one of the crane rails so the cranes could traverse the length of the arch with out binding.
 - Installed and aligned the core transfer table, which includes the new FED and core tray rests on the core handing side.
 - Cleaned and inspected the slot drip pans. The casing has risen, or the slot has settled depending on how you want to look at it, about 4"-6". We still have plenty of clearance between the drill and the casing so the casing does not need to be shortened. However, some shimming needs to be done on the piece of drip pan surrounding the casing to ensure drilling fluid flows into the bore hole.
 - Powered up and tested the centrifuge. The centrifuge needed to be leveled due to the floor heaving.
 - Powered up and tested the screen cleaning system.
 - Calibrated both air monitors

COMMENTS
(Problems, Concerns, Recommendations, Etc.)

- On Saturday we were going to drill the first core, however the generator went down in the early morning on Saturday and the power outage went undetected for several hours. It took until late morning to get the core handling computers and refrigeration units back up and running so we decided to delay drilling the first core until Monday.



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 4 **for period** 12-15-08 **through** 12-21-08

Prepared by: Jay Johnson **Date:** 12-23-08

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

- Tanner arrived at WAIS on Thursday.
- Finished cleaning the slot drip pans. The slot has settled 6"-7" in relationship to the casing since last season. With this much movement the drip pan that is attached to the casing need to be re leveled so the drilling fluid will drain properly.
- Removed anti-torque section "A" from the drill string and replaced it with section "B". While connecting the Farmore to the "B" anti-torque section, one of the fiber optic connectors got caught and broke the fiber. We were able to re terminate the fiber without any problems. The drill string has since been working without any problems.
- Aligned the NICL core saw station.
- Finished welding the new t-handles into the screen section valves.
- Did a reaming run to the bottom of the bore hole.
- Test ran the pump up to 3600rpm in fluid. Nicolai reports that it ran well and also ran cool.
- On Tuesday we drilled the first core. As per NICL's request it was .926m long. We had to have the drill moving to get the cutter motor to start, but otherwise the drill run went smooth.
- After the first drill run we took the cutters off and ran the drill back to the start depth of the last run. At this point the cutter motor was cycled on and off without the drill moving. This was done ten more times at different depth increments. The cutter motor started without a current spike every time. This proved that the current spikes we see when starting the cutter motor are caused by the cutters.

- Took a sample of the bore hole fluid. The density was .918 at -31°C.
- Installed a new circuit board into the high voltage rack to allow it to be tied into the winch e-stop system. The high voltage power supply will now power down when a winch e-stop is pushed.
- Tested all of the winch e-stops. They are all functioning properly.
- Tried drilling two cores in one drill run (2 for 1 as we are now calling them). We were able to do the double core break every time, but initially we were able to drill a full second core only about 50% of the time because the cutter head would pack with chips due to a loss of drill fluid flow. When the first core break was done we would see a corresponding spike in the pump current followed by a dip. The pump would sometimes recover from the dip and others not. (For a given speed, a decrease in pump current correlates directly to a decrease in fluid flow.) The winch software was set up so that it would log the core break data only after traveling for 5m. We found that if we stopped the winch right after we saw the core break, approximately 1m, and then manually told the computer to record the data that we could prevent the pump current from spiking and dipping. We think the dip in pump current after a core break was due to the loosely packed chips in the screen section dropping down and plugging the butterfly valve at the bottom of the screen section. The pump could not clear this blockage and therefore it would lose flow. We are now achieving a 100% success rate when drilling 2 for 1 cores. The cores are coming up with very little or no damage to the ends. We are seeing up to a few cm chip pack between the cores now and then, but it isn't consistent. Our latest technique is drilling 3 for 1 cores! We drill two .98m cores followed by a .48m core and then reverse it on the following run. So far drilling 3 for 1 cores is working quite well.
- On Friday we started working in two shifts. On Monday we will go three shifts.
- On Sunday a bunch of us worked for a few hours doing maintenance. Bill M. and Dave cleared an ice plug in the hose connecting the 141B bulk fluid tank to the fluid handling system. Krissy, Elisabeth, and Bill N. went into the slot to again clean the slot drip pans and holes in the casing that let the drilling fluid drain back to the bore hole. Bill N. and I moved one of the core barrel rollers on the core transfer table and realigned the core barrel. Krissy, Dave, and I troubleshooted the problems with the air monitor. See the safety report for information about the problems we were having with the air monitor.
- The new FED and core tray alignment system is working very well. Cores push out much easier than last season using the new netting deployment tube; however it takes some work to get the netting on the deployment sleeve and to deploy it properly. The core handlers are working on perfecting their technique.
- A total of 41.123m were drilled this week. The final bore hole depth for this week is -621.55.

COMMENTS

(Problems, Concerns, Recommendations, Etc.)



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 5 **for period** 12-22-08 **through** 12-28-08

Prepared by: Jay Johnson **Date:** 12-28-08

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 196.77m were drilled this week. The final bore hole depth as of 12:00AM Monday was 818.32m
- Started 24 hour operations on Monday.
- WAIS Camp celebrated Christmas on Christmas Eve with an excellent dinner, gift exchange, and party. Second shift took the 24th off. First and third shifts took the 25th off. This made it possible for everyone to attend the Christmas Eve dinner and celebration.
- We are working today (Sunday). Our next day off will be for New Years.
- We are continuing to drill 3 for 1 cores! Each drill run is producing ~2.5m of core.
- At about 630m, changing ice conditions began slowing the drill penetration rate. A fresh set of cutters were tried, but they didn't make a difference. We also began backing off the anti-torques to see if they were holding the drill up. This helped some, however the accelerometers and cutter current graphs were showing that the cutters were still not cutting smoothly. This seemed like an opportune time to test the front shoes. It took some work to dial them in because the chart for theoretical shoe height and penetration rate did not match up with reality. I ended up machining .008 off the shoe height to get the 5mm pitch I wanted. In the process of getting the shoes dialed in we ended up slipping the anti-torques while trying to drill. To get by this spot we tried bumping out the anti-torques, but this was not working, so we ended up shortening the screen barrel by one screen for one run. This technique worked very well. Judging by the graphs and the feel of the cable, the front shoes are generating a smoother cut than we saw with the rear button shoes.

- On Monday the core handlers started noticing that the screen valve handle was leaving a mark in the top core. Apparently this core is sucked to the top of the core barrel with enough force to leave a mark. The simple fix was to add foam bumpers to the handles.
- Friday night the hot air blower for the screen cleaning system quit working. Nicolai determined that the controller failed. The carpenters built us a warming box for drying the screens. It is working well and will get us by until we are able to get parts to repair our hot air blower.
- The flow meters that meter the fluid coming from the bulk fluid tanks (gravity feed) do not receive enough flow to operate. We have modified the plumbing on the fluid mixing tank so that the circulation pump can also draw fluid from the bulk tanks. This should increase the flow enough for the flow meters to operate. Nicolai is working on modifying the wiring so the circulation pump will operate in conjunction with Isopar K and 141b batch controllers.

COMMENTS
(Problems, Concerns, Recommendations, Etc.)



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 Dahner
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 1/4-28's and a back up ring was added under the screw heads so 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.)



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project:	T-350-M				
Project Principal Investigator:	Dr. Charles Bentley				
Report No:	7	for period	1-5-09	through	1-11-09
Prepared by:	Jay Johnson			Date:	1-11-09

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
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ACTIVITIES DURING PERIOD

- A total of 148.35m were drilled this week. The final bore hole depth as of 12:00AM Monday was 1175.485m
- A week full of challenges!
- On Monday we had the first storm of the drilling season. The Storm peaked Monday evening and then gradually let up going into Tuesday. About $\frac{1}{2}$ " of snow fell inside the drill arch during the storm. The snow fall inside the arch caused the humidity level to rise and frost to grow on the winch break disk. The frost build up was causing the break to slip during motor had offs. When this happened the computer would set the holding torque on the motor it was handing of to too low. Then the break would release and a few meters of cable would pay out before the winch would start paying in. The problem was mitigated by using a putty knife to scrape the frost from the break disk. By Tuesday afternoon the humidity level in the arch had dropped enough that frost was no longer forming on the disk. We also built a tarp roof over the winch to keep snow from building up on the cable because it was affecting the pay out depth.
- Also on Monday, we began having problems with the drill not penetrating. We drilled the first core without problems, did the core break, and went to drill the second core and the drill would not penetrate at all. Our first thought was the drill was spinning on some chips or piece of ice. We tried different cutter speeds, different pump speeds, different feed rates, and running the drill into the bottom and nothing worked. Finally we decided to try the rear button shoes set to the same pitch as the front shoes that we had been running up until this point. The drill started cutting right away. After doing a couple of drill runs with the rear

button shoes we decided to try the front shoes again. Once again they would not penetrate. We tried again with a courser pitch and the drill still would not penetrate. We have been running the button shoes since. The cutter current and accelerometers graphs are not quite as smooth when compared to drilling with front shoes, but the core handlers have not reported any change in core quality.

- We are suspecting that the ethanol we use to clean the barrel connections, cutter head, and screen section valve may be accumulating at the bottom of the bore hole. If you take a sample of chips from the screens and melt them, as they melt, we can see a few beads of ethanol drop out and go into solution with melt water. We are going to try and put a quantitative number on how much ethanol is present by measuring the density of the melted chips. We decided to stop using ethanol for everything accept to clean the cutter head. The cutter head is cleaned over a bucket to reclaim the ethanol.
- On one of the runs on Wednesday, when the tower was tilted vertical, it didn't get parked fully on the hard stop. This allowed the top of the drill to catch the bottom tower roller as it was brought out of the hole. No real damage was done to the drill or tower; however the jolt caused a portion of the lower most core to break into "rubble" and a few cm of core to be lost out of the barrel. The upper two cores sustained no damage. The core barrel had to be taken apart so the core could be removed without further damage.
- After the core barrel had been taken apart to remove the core, it was observed that some chips had built up in the annulus between the OD of the core sleeve and the ID of the core barrel. The core barrel was separated into three pieces and put into the hot box to thaw out.
- The pump on the X motor section seized up. The pump shaft bound up in the lower bushing. I was able to rebuild it by polishing the shaft and replacing the grease seal. In the mean time we ran the Y pump.
- On Thursday at the start of third shift, when starting the pump for a run, the current maxed out and all three hall sensor lights for the pump motor came on. Only one or two hall sensor lights should be on at one time. If all or none are lit it means there is an electronics problem in the instrument or motor section. Both the instrument and motor sections were swapped out.
- The Drill ran fine until the end of second shift Thursday. On their last run of the day they were drilling a core when both the cutter and pump motors quit running and would not restart. The drill was brought back to the surface. A burnt smell was coming from the motor section. With the motor section removed we found soot and charred material at the wiring connections on the drill fluid side pressure compensator piston. We determined that water had been present in this area allowing the 300 volts that goes to the motors to arc between connector pins. We opened the motor section for further inspection. The oil and wiring inside was in fine condition. Ice chips gather in the compensator piston area over time. It would have taken heat from the motors or ethanol to generate the water. We have never seen these chips melt from motor heat in the past. Ethanol was and is routinely used to clean the electrical connectors before assembling them. Our hypothesis is that some residual ethanol from cleaning the connectors melted the ice chips and caused the arcing. The other possibility is that if ethanol is present in the bore hole it my have melted some of the chips around the electrical connections and caused the arcing. No drilling was done on third or first shifts on Friday while we diagnosed the problem and how to fix it. We decided to pot the

electrical connectors on the drill fluid side of the compensator piston in epoxy to insulate them. The second part of the fix was to prevent ice chips from entering this area. This was done by replacing the breather hole with a sintered bronze breather plug and taping over an opening used to view the oil level in the motor section. The epoxy needed to cure over night, so second and third shifts took this time as their "Sunday" off. On Saturday morning we reassembled the motor section and drill. So far everything is working well again.

- We are down to one spare instrument section and possibly one or no spare motor sections. Motor section Y that sustained the arcing might be good, but we haven't tested it yet.
- First shift worked for a half day on Sunday, our day off, to help make up for some lost drilling time.
- We have received the remainder of the drilling fluid needed to complete this season.

COMMENTS
(Problems, Concerns, Recommendations, Etc.)



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 8 **for period** 1-12-09 **through** 1-18-09

Prepared by: Jay Johnson

Date: 1-18-09

ICDS Personnel on Site: Kristina Dahner
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 198.259m were drilled this week. The final bore hole depth as of 12:00AM Monday was 1373.744m
- Drilling went much smoother this week!
- The ice has become less brittle throughout the week.
- On Friday, at a depth of 1320m, we drilled a continuous 2.5m core. The core handlers were able to cut it without a problem! We are now drilling 2.5m cores with only one core break per run.
- On Wednesday we tried the front shoes again. They are working well so we have continued to use them due to there more stable cutting characteristics. With input from the core handlers, it was decided that a shoe height of .192" gave the best balance between core quality and penetration speed. With the current ice conditions we are running a penetration speed of ~3.8mm/s.
- The pressure sensors between the seals on the instrument section bulk heads started reading the bore hole pressure (~1700psi) which means the seals have seeped. The interesting thing is that some days they will read very low pressure and other days high. The internal pressure sensor continues to read its normal ~11.4psi, so we aren't going to mess with anything.
- We haven't had any electrical problems with the motor section since the modifications were made to it last week.
- The rotating seal on the "X" motor section has started to leak. We are keeping a watch on the oil level and plan on continuing to run it to the end of the season.
- I helped Bruce V. and Brian B. realign the NICL saw table before we started cutting core.

- I fabricated a 2" wide piece that fills the void between the bottom of the ice core and core tray. This piece is mounted under the saw blade at the cutting station to support the core on either side of the blade as it is being cut. It seems to be effective at preventing the core from blowing out on the bottom as it is cut.
- Changed out the cutters and resharpened the ones we had been running.
- Dave F. was unable to put a figure on how much or if there is ethanol in the bore hole. The melted chips created an emulsion with the 141b (density of the liquid was over 1), so with two unknowns he was unable to determine if ethanol was present.
- Everyone took Sunday (Saturday for second shift) off. This will be our last day off for the season.

COMMENTS
(Problems, Concerns, Recommendations, Etc.)



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 9 **for period** 1-19-09 **through** 1-25-09

Prepared by: Jay Johnson **Date:** 1-26-09

ICDS Personnel on Site: Alex Shturmakov
Kristina Dahner
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 140.152m were drilled this week. The final bore hole depth for the season is 1513.896m
- 933.5m were drilled this season
- On Thursday evening the last core was drilled. Drilling stopped when the NICL basement was full.
- Alex arrived on Monday. He was scheduled to leave on Tuesday, but due to bad weather and mechanical problems with the LC-130 fleet he is still here.
- Third shift on Thursday started packing.
- On Friday we dropped back to two shifts and on Saturday back to one shift.
- On Friday we unspooled the winch cable and second shift readied the cable tensioner for spooling the new winch cable.
- The bore hole fluid density was checked. Is it still at .920 at -31°C.
- The bore hole fluid level was brought up to 75.4m
- Cargo has been trying to get us the new winch cable for the past two weeks, but it has not arrived yet because of bad weather and mechanical problems with the LC-130 fleet. Saturday was the last final day we could receive the cable and still have enough time to spool it and finish packing. Saturday's flights were canceled, so the cable is not getting installed this season. The cable scheduled to arrive on the next flight. It will be stored in the arch until next season.
- On Saturday, with the change in plans, the cable tensioner was removed from the arch and final packing began. By the end of Sunday all packing was complete, equipment in the arch was tarped, and the MECC shop was packed

and on a berm.

- The winch cabinet will be retuning to Madison this year. The current motor hand off procedure is putting a lot of stress on the mechanical components of the winch as cable payout increases. The winch cabinet and spare winch motors are being sent back to Madison so a better hand off procedure can be worked out before next season.
- We are all scheduled to fly to MCM today (Monday) on two separate flights.

COMMENTS
(Problems, Concerns, Recommendations, Etc.)



PROJECT SITUATION REPORT DISC Drill 08-09 Season

Project: T-350-M

Project Principal Investigator: Dr. Charles Bentley

Report No: 10 **for period** 1-26-09 **through** 2-01-09

Prepared by: Jay Johnson

Date: 2-01-09

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ACTIVITIES DURING PERIOD

- This is the last weekly report for the season.
- All ICDS personnel flew from WAIS to McMurdo on Monday.
- On Wednesday Bill M. and Nicolai flew to CHC.
- Returned gear issued from the BFC and coms.
- Put two pieces of cargo into the cargo system to be shipped back to ICDS.
- Five pieces of cargo will be wintering in MCM at the MEC building.
- On Wednesday we had our outbrief with RPSC.
- On Thursday Alex had an outbrief with the drilling team.
- On Friday the rest of the DISC drill team flew to CHC.

COMMENTS (Problems, Concerns, Recommendations, Etc.)