

Project: T-350-M
Project Principal Investigator: Dr. Charles Bentley
Report No: 6 for period 12-19-10 through 12-25-10
Prepared by: Kristina Dahnert Date: 12-26-10

IDDO Personnel on Site:

Patrick Cassidy
Kristina Dahnert
Dave Ferris
Chris Gibson
Josh Goetz
Jay Kyne
Nicolai Mortensen
Elizabeth Morton
Steve Polishinski
John Robinson

- Happy Holidays to everyone!
- This has been a week of challenges and the drill is keeping us on our toes!
- Shift work started this week and shifts are as follows: 1st shift from 7:00am-3:30pm is Elizabeth, Jay and Steve, 2nd shift from 3:00pm-11:30pm is Patrick, Dave and John and 3rd shift from 11:00pm-7:30am is Josh and Chris. When Jay Johnson arrives at WSD next week, I will move to 3rd shift to drill with Josh and Chris.
- Minor software issues encountered this week, including issues with the shared variable engine and booting of the computers; the sonde computer should always be booted first, the sonde program running and the data streams enabled before the winch computer is booted
- A score mark was seen on the core earlier in the week, so the jig transit was once again used to re-level the core transfer truss, the FED and the core receiving tray; with Arch floor movement this season, it is becoming increasingly difficult to align components; core transfer is now smooth again
- Between 10-20 cm of minor barber poling is still seen at the tops of the

cores, but is decreasing; chip packing and refreezing in these grooves

made one core difficult to remove from the barrel and push through the FED

- Several issues transpired with our three instrument sections J, K and L this week. As last week's report noted, the new motor driver boards in sections J and L did not function properly when integrated into the system, thus we continued to run the old configuration in section K with sub par DDC modules. Instrument section pressure was continuously monitored and fluid was drained several times from instrument section K in an attempt to prolong the lives of the DDC modules. Between 500 mL and 3 L of drill fluid were removed during each draining. On Thursday morning, the DDC modules finally went on strike, necessitating the need to reassemble instrument section J and test the new fixes implemented by Nicolai throughout the week. Instrument section J now functions properly and Nicolai is working to implement the same fixes in section L, which will serve as our spare. Hooray!

- Our new J3 cutter head began showing signs of deformation similar to those witnessed last season. We immediately shimmed the core dog cages out to .024" (down from .05") clearance to the borehole wall to reduce the outward flexing seen at the head during core breaks. As with last year, we continue to take caliper measurements between opposing core dog cages after each run. Spare cutter heads are onsite if needed.

- Experimentation continues with winching speeds. We are now descending at a max speed of 1.2 m/s while keeping our weight-on-bit (WOB) below 3000 N. We are ascending at a max speed of 1.5 m/s while keeping our cable tension below 24000 N.

- Periodic 'knocking' has been heard at the level wind sheave immediately after core breaks. This is reminiscent of the crown sheave issues experienced last season. We continue to monitor the sheave, keeping our cable tension under a conservative limit on ascent and have our mechanical engineers assessing the situation.
- After one drill run on Wednesday, it was found that the drill was not rotating freely at the Farmor connection. Anti-torque section A was removed from service and inspected. Though the Farmor returned to free-spinning operations, loose screws up inside of the section were found during inspection. A Gisma connector was installed on section C and the section was installed on the drill.
- The 225kW Cat generator went down for a very short period early in the week showing a non-descript error code. The camp mechanic, Shawn, has since reviewed the generator switchgear and it is now functioning in automatic mode. UT, Ben Buchwald, arrived in camp to attend to generator temperature issues witnessed mainly during last season. He will implement louvers to help the generators function at their optimum temperature.
- Late in the week it was discovered that the pin in the hydraulic oil valve in Motor section Z was not plunging and resurfacing correctly. Motor section X was swapped in, but exhibited the same issue. The slant of the pin has been remedied and section X continues to function well on the drill. Section Z is still considered a working spare.
- With a new temperature sensor implanted in the instrument sections this season, borehole temperature is now more accurate and is being recorded both before and after coring each run. The borehole is approximately

-30°C during descent and ascent, approximately -23°C immediately before

coring and approximately -18°C at the end of coring.

- Our Christmas celebration was held on Friday night, Christmas Eve,

complete with an outstanding dinner of filet mignon, lobster tails,

potatoes duchess, vegetable tart, mustard greens and chocolate pie with

raspberry sauce. Yum! A white elephant gift exchange also added to the

excitement of the evening.

- On Christmas day, a barbeque was graciously prepared by one of the camp

equipment operators and one of the camp mechanics, complete with steak,

salmon, potatoes and peppers, baked beans and portabella mushrooms. The

barbeque was complimented by classic Christmas movies such as "It's a

Wonderful Life" and "A Christmas Story".

- Camp staff is enjoying a well deserved two days off this weekend. The

drillers and core processors (though also very deserving) took one

relaxing day off, but it's hard to keep us out of the Arch now that we're

up and running! Let the drilling continue!

- Final driller's depth for the week: -2683.188 Total meters drilled this

week: 98.600 meters

SAFETY

- The DISC air monitor has been exhibiting periodic 'Trouble' alerts on

various channels. Also, while the oxygen sensor calibrated correctly at

startup, it has since fallen out of calibration and will not recalibrate

correctly. After each calibration attempt, the oxygen reading slowly

drifts downward until it alarms on all channels. As we are confident we

have good quality air in the Arch, having had the large back doors open on

most days, we have disabled this oxygen sensor. We now have the auxiliary

pocket oxygen monitor powered up and stationed in the control room, except when utilized during slot entry.

- Paulene Roberts, our camp manager, prepared a WAIS Divide Arch Response document outlining emergency response protocols. I have reviewed this document and provided Paulene with very minor additions and edits.

COMMENTS

(Problems, Concerns, Recommendations, Etc.)

- As with all previous drilling seasons, we continue to wade through whichever issues the drill sends our way. The drill sections have been troublesome this season, but we are confident in the reliability of the current configuration of sections C + J + X. Sections B, L and Z remain as spares. Once again, we have a very motivated crew of drillers and keep our eyes on the goal of finishing this hole!