

**Expedition Log for IODP Expedition 325
Week 5
Great Barrier Reef Environmental Changes**

12th March 2010

Drillers' Buzz words by Graham Tulloch

I have been asked to explain the drilling process to you; I will also introduce you to some of the buzz words used by drillers and people involved in drilling. Take notes, I may ask questions later!



S_Green@ECORD_IODP; Graham in action!

How do we get core up from the seabed to the deck?

We use a drill bit to cut hole in the seabed. Our bit is not like one used around the house - ours has a hole in the middle and it is this 'hole' that gives us the core we need for the scientists to study. The core is collected in a sample tube sometimes called a core barrel.

We send a tool called an overshot down on the end of a wire to grab the sample tube. This is where the term "wireline", to describe our style of drilling, comes from.



C_Cotterill@ECORD_IODP; View of the latchhead – the top of the sample tube, onto which the overshot latches to pull it back up

The sample tube is housed in the first section of pipe to go into the water. This pipe is 4.5m long and is called a Bottom Hole Assembly, or BHA. It has a number of rings in it including one to hold our sample tube in place, one to make it go round and one to make it steadier as it turns (this improves core recovery and quality). The drill bit is at the very bottom.



D_Smith@ECORD_IODP; BHA and drill pipe ready to run

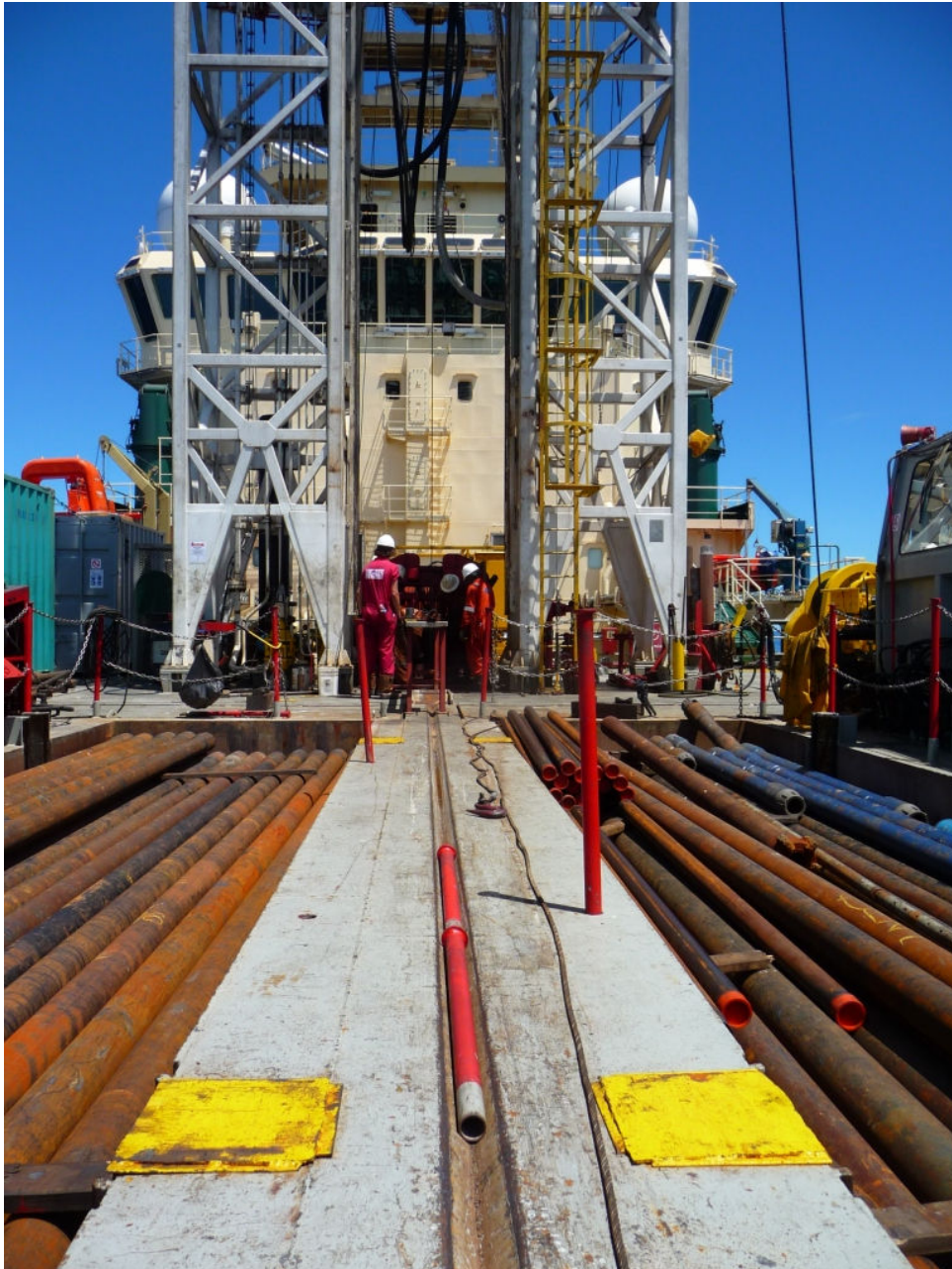
If the BHA is only 4.5m how do we reach the seabed and drill a deep hole?

We attach other pieces of pipe to the top of the BHA, this is called running. These sections of pipe are approximately 9.3m long, the first two of these we put on are called collars. The collars are heavier and less flexible than the other (API) pipes and give weight and stability to the “string” (the term used for a number of pipes joined together).



C_Cotterill@ECORD_IODP; an API pipe ready to be “run”

We simply screw the pieces together until we reach the seabed then start rotating the string and put a little weight on the bit and (fingers crossed) it goes into the sediment or rock on the seabed. When we need to go deeper into the seabed we just add another piece of API pipe.



C_Cotterill@ECORD_IODP; Drill derrick and pipe racks containing pipe ready to be “run”

How often do you recover the sample tube?

Our core barrel is 3m long so if we are coring (collecting samples) this is as deep as we go before taking the sample tube out, we call this a “run”. However we often core less than this to try to improve the quality of the core we collect and the quantity.

The bit can become blocked and if this happens at the beginning of a run everything we drill through from then can’t get into the sample tube, so by taking shorter runs we get more sample per meter.



C_Cotterill@ECORD_IODP; Sample showing at the end of a core barrel

What is the bit made of?

Actually we have two bits working at the same time! The main bit is on the BHA and the second one is on the sample tube or the Alien corer (ALN), is on the sample tube and sticks out from the main one by about 12cm.



D_Smith@ECORD_IODP; BHA and ALN bits

At the moment the main bit is a Stepped Impregnated Diamond (SID) and the other one is an Impregnated Diamond (IMP) bit but we can change things about to suit what we are attempting to drill.

An impregnated bit has a working surface made up of a rough dust of industrial diamond pieces; the stepped version, rather than being a flat face has a series of steps in it making a slight conical shape.

How do you get the tube back into the BHA again?

The sample tube is simply dropped down the string and it locates or latches in the BHA.

Finally when we reach the scientific objective of the borehole we “trip” the string; that is lift and unscrew each piece and bring it back to the deck.

As you can see there are a lot of buzz words and abbreviations used in drilling. It makes life easier when we work with people from different countries (as just now) as a lot of the buzz words and abbreviations are the same – so we all know what we’re talking about!

So you run API pipe to the seabed, drill a hole in the seabed with a bit with a hole in the centre called an Alien, the core goes into a sample tube which is brought back to the deck by a wireline overshot. This is repeated and more pipe is added to the top the deeper you go and when you finish you trip the string back to deck?

Yes!