

**Week 2 Drilling and Scientific Report for IODP Expedition 313
New Jersey Shallow Shelf**



7th May – 13th May 2009

1. Operations

Rapid progress was made at the beginning of Week 2 on Thursday 7th May using the strategy of HPC spot coring every 60 ft or less. Seven HPC attempts over 64 m were made in 20 hours, with a slight set back occurring when the HPC tool became stuck in the BHA, and the wireline wire broke while trying to pull the tool free. The result of this was the PQ string had to be pulled out of the hole, which was a wet pipe trip due to the HPC sealing the BHA. The wireline was not fished for since there is no way to circulate the mud during fishing, which would have increased the risk of hole collapse.

The wireline wire, which had broken approximately 80 ft above the BHA, was replaced early in the morning of Friday 8th May. The drill string was tripped back into hole with the non-coring bit inserted. The string reached the base of the hole 20 m higher than expected due to infill, which was subsequently drilled out. The non-coring barrel got stuck 3 m above the base of the hole when it was unlatched from the BHA. This necessitated another drill string trip. After 14 hours, HPC coring resumed. The liner collapsed in several runs due to very stiff clay, which limited the core recovery and caused several core barrels to become stuck in the BHA.

Problems with the HPC tool getting stuck in the BHA continued for the first 3 hours of Saturday 9th May. After partly tripping the drill string, the HPC became free and was returned to the deck. From 0330 hrs, EXN and HPC coring were alternately conducted, with the EXN tool eventually chosen in favour of the HPC tool. Seven runs with the EXN tool collected very good core, before chattering on the drill string and no penetration indicated a change back to sand.

To tackle this lithology, the ALN corer was prepared and early on Sunday 10th May coring resumed with the ALN in what appeared to be a gravel layer. There was no recovery in this layer. A back flow of mud occurred and large bubbles were observed rising up the drill string. No H₂S or abnormal smell was recorded by the DOSSECC and ESO instruments, and it was assumed that the gravel layer was hosting a freshwater flow. The next core did have an abnormal smell, and tests using the ESO gas analyser measured 7.7ppm H₂S and no flammables. A later core tested positive (1%) for flammables near a thin, very dark layer. Excellent coring conditions prevailed throughout the day, through alternating hard clays and hard fine sands.

Good and rapid recovery with the ALN tool continued into Monday 11th May (17 core runs and 52 m penetration in the first 15 hours, most yielding over 100% recovery). Progress slowed slightly when the lithology became more sandy, and drilling conditions became very tough going into Tuesday 12th May. Slow, but steady, progress was made in this sandy layer, until the hole collapsed and the drill string became stuck. Upon freeing the string, 9 m of infill blocked the hole and an increase in rotational torque was observed. To reduce this pressure on the string, thought to be from the clay formation above, the string was pulled back a total of 26 m to ream the hole. Progress continued through a very loose, clean sand for the rest of the day, with surprisingly excellent core recovery.

On Wednesday 13th May, very good progress was made with 20 core runs and 61 m penetration using the ALN corer. Recovery was very good, with most core runs achieving over 90%, and in many cases 100% recovery in sand and then very firm silty sand lower in the section.

2. Hole summary

Hole	M0027A
Latitude	39° 38.04606 N
Longitude	73° 37.30146' W
First core	02/05/09 at 00:10
Last core	----
Cores recovered	1H to 157R (157 cores)
Drilled length	375.35 m
Recovered length	299.14 m
Recovery	79.70 %
Depth at midnight 13/5/2009	451.06 mbsf

3. Science

The week began with HPC spot coring at 177 mbsf in structureless, uniform, fine sand. The clay matrix increased at 183 mbsf and at 192 mbsf we returned to continuous coring with the extended nose barrel and had excellent recovery in dense silty clay. Fine quartz sand reappeared at 209 mbsf along with mica and shell fragments, and coarse sand and chert granules and pebbles marked a level of minimal recovery at 224 mbsf. We had high recovery and rapid penetration for the next 70 m of alternating 5- to 15-m intervals of fine sand with mica and shells and silty clay with lignite. Glauconite became common below 335 mbsf and the cores became coarser and more cemented, but as it disappeared again, by 378 mbsf recovery had decreased to 50% in loosely cemented, fine to medium quartz sand. Shell fragments began to reappear and were concentrated in 10 cm intervals by 403 mbsf. The week ended with continuous coring through a set of large clinoform bodies. We documented an overall coarsening upward trend from micro-laminated, clayey silts to silty clays with micas, pyrite and small shell fragments at base passing upward to medium-grained, quartz-rich, shelly sands with thin shell layers.

4. HSE Activities

A platform induction and health and safety briefing was given by ESO to the newly arrived staff at 1215 hrs, and by Captain Farrel at 1830 hrs on Wednesday 13th May.

5. Figures

On next two pages:

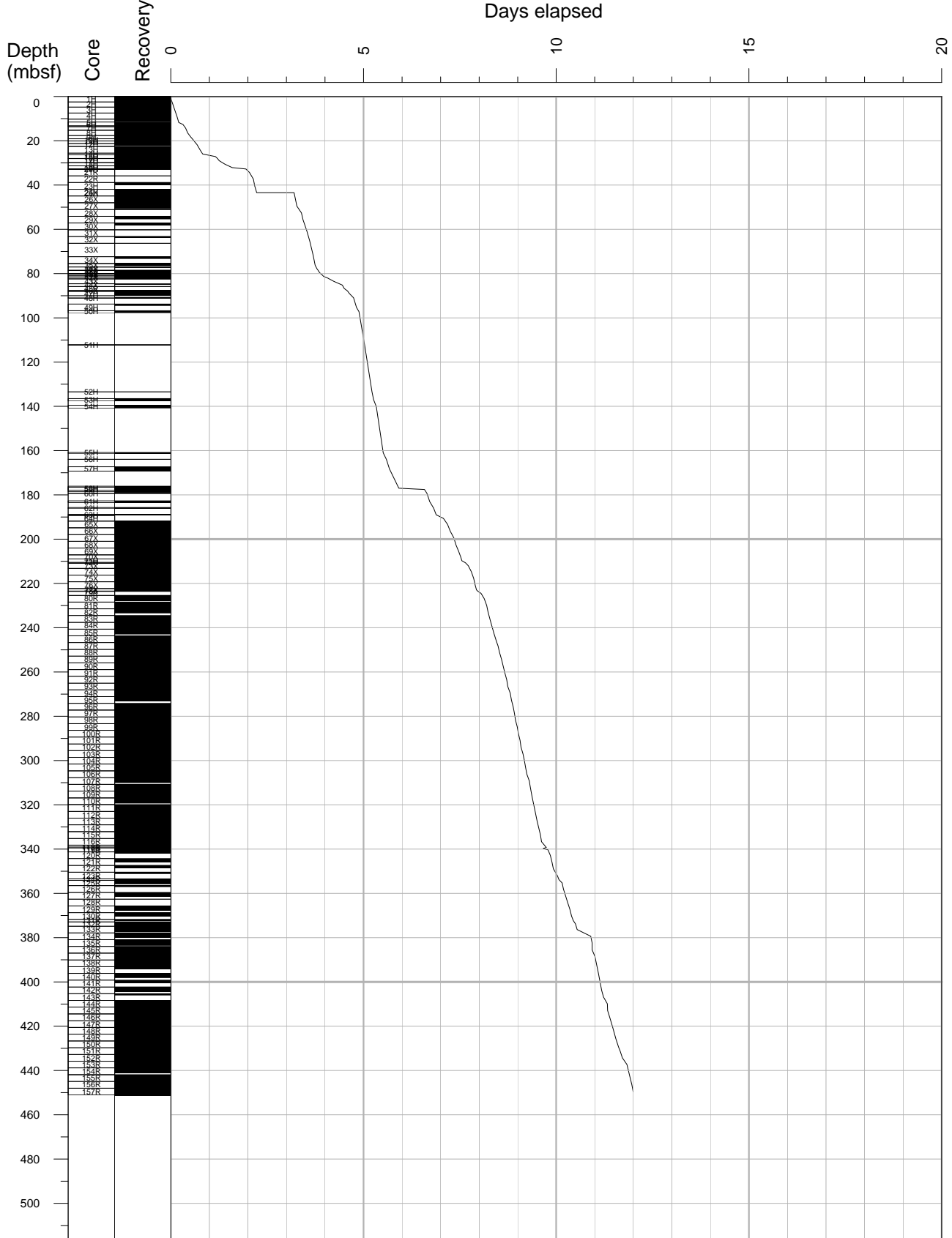
Figure 1 – Recovery and depth versus time plot at Hole M0027A, up to 2400 hrs on 13th May.

Figure 2 – Breakdown of hours, up to 2400 hrs on 13th May.

IODP Expedition 313

Hole M0027A progress summary

Latitude: 39° 38.04606 N
Longitude: 73° 37.30146' W
Water depth: 33.5 m



IODP Expedition 313 - Breakdown of hours

