

JOIDES Resolution Sea Trials Transit Week 4 (15-21 February)

22 February 2009

OPERATIONS

Hole U1330A was spudded at 1355 hr on 15 February 2009 using a Rotary Core Barrel (RCB) assembly. This hole was offset 30 m due south of ODP Hole 807C and was drilled to 103.6 mbsf with an RCB wash barrel (1W) in place. A wash barrel has the check valve at the top removed to allow circulation down the inside diameter of the barrel to flush any material that might get in. It is occasionally used in lieu of a center bit and by definition is designed to not intentionally recover core. Two RCB cores (2R and 3R) were then cut from a depth of 103.6 –122.8 mbsf recovering 84.2% of the formation penetrated. An RCB center bit was then used to deepen the hole to a depth of 553.8 mbsf for wireline heave compensator and logging tools evaluation. A wiper trip was made to condition the hole for logging, the bit was released, the hole displaced with 190 barrels of heavy 10.5 ppg mud, and the end of the pipe was placed at 96.7 mbsf. Logging system testing required ~48 hr with initial testing taking place inside drill pipe followed by open hole testing.

A total of three logging runs were made using three separate tool strings. The first tool string, consisting of the Gamma Ray, Density, Caliper, Downhole Acceleration (HNGS/HLDS/GPIT/DTE) tools, reached to within 1 m of bottom. The second tool string, with Formation Microscanner (FMS), reached 524 mbsf or ~30 m off bottom. The third tool string, consisting of the Gamma Ray, Density, Downhole Acceleration and Magnetic Susceptibility (HNGS/HLDS/GPIT/MSS) tools, reached 469 mbsf (~85 m off bottom). Preliminary results indicated that the new Schlumberger wireline compensator was performing at an acceptable level, although LDEO and Schlumberger personnel felt that the system ultimately would be capable of exceeding performance levels achieved with the LDEO wireline compensator used previously during IODP Phase I. Logging activities encompassed general maintenance of the Wireline Heave Compensator, performance documentation and analysis of the suite of logging data collected at Hole U1330A.

The drill string was recovered back aboard ship by 0945 hr 19 February 2009 ending Hole U1330A. The drill string was immediately tripped back to the sea bottom with an Advanced Piston Corer (APC)/Extended Core Barrel (XCB) bottom hole assembly (BHA) and Hole U1330B was spudded at 1945 hr on 19 February 2009. This hole was continuously APC cored to a depth of 92.2 mbsf. Ten APC cores were recovered with an overall average recovery of 94.6%. This is relatively low for APC coring however core 4H lost 76% of its core when the flapper core catcher stuck in the open position. The other nine cores achieved better recovery rates (101.1 to 105.4%). The new FLEXIT core orientation tool (Tensor replacement) was successfully deployed on all 10 APC cores. The new APC temperature tool (APCT3) was successfully deployed on Cores 5H, 7H,

and 9H. The Drill String Accelerometer tool was deployed for Cores 5H through 8H recovering nearly 6 hours of motion data. This data coupled with LDEO Motion Reference Unit (MRU) data from the wireline heave compensator should allow later evaluation of Passive Heave Compensator (PHC) performance. All rig floor drilling equipment and all downhole tools/coring systems performed well and are considered operational. The upgraded Falmouth Scientific positioning beacon also performed well including the wide angle transducer (shallow water) version mounted on the subsea TV frame. The Dynamic Positioning System and seafloor beacons are considered operational although adjustments to the Automated Station Keeping system will be required to the anticipatory commands and positioning model built into the Nautronix control console. The vessel departed Site U1330 at 1645 hr 20 February 2009 bound for Honolulu.

SCIENCE AND ANALYTICAL SYSTEMS

Readiness assessment and internal acceptance testing activities continued in parallel throughout the week. The Readiness Assessment Team continued to familiarize themselves with and evaluate the new shipboard applications for sample data entering (SampleMaster), visual core description (DESCLogik), and sample and science data retrieval. Core recovery at Site U1330 allowed evaluation of core flow through the ship's laboratories by the Readiness Assessment Team and USIO technical and scientific staff. Cores from Holes 320T-U1330A and U1330B were processed using the whole round and section half petrophysics tracks for magnetic susceptibility, gamma ray attenuation densitometry, non-contact resistivity, P-wave velocity, natural gamma ray, and digital image scanning. Cores were split and discrete samples taken for routine shipboard analyses including chemistry, micropaleontology, and sediment magnetic properties. Core section halves and core catcher material were described using the new visual core description data capture application DESClogik.

Site U1330 is a reoccupation of ODP Leg 130, Site 807, which is situated near the equator ($\sim 3^\circ$ N) in a basement graben feature of the Ontong Java Plateau. Sediments at Site U1330 are characterized by light gray to white pelagic calcareous nannofossil ooze with foraminifers, locally grading to foraminifer ooze with nannofossils. Lithology in the uppermost Core U1330B-1H is noticeably browner in color owing to a higher concentration of marine organic matter. Traces of siliceous microfossils (radiolarians, silicoflagellates, diatoms) are present throughout the cores. Sediments are slightly to moderately bioturbated with pyritized tubular burrows and occasional cm-scale green and purple bands. Drilling disturbance is locally intense with soupy intervals in cores recovered from Hole U1330A. Planktonic foraminifer biostratigraphy provided an estimated age of early Pliocene (~ 4.3 to 5 Ma) for the core catchers of Cores U1330A-2R and 3R (103.6 to 119.7 mbsf), and Holocene to latest Pliocene (0 to ~ 2 Ma) for the core catchers from Cores 1H through 5H analyzed so far from Hole U1330B. The stratigraphic record recovered at Site U1330 can be described as a single lithostratigraphic unit and is consistent with previous observations made by shipboard scientists of ODP Leg 130.

TECHNICAL AND HSE ACTIVITIES

The end of expedition calendar was provided to all scientists and technical staff to prepare and get organized for end of cruise activities and deadlines. U.S. customs and immigration forms were provided for preparation prior to arrival in Honolulu. Lifeboat and fire drills were conducted on Tuesday.