

## **IODP Expedition 346: Asian Monsoon**

### **Week 5 Report (25 August–1 September 2013)**

#### **Operations**

The fifth week of IODP Asian Monsoon Expedition 346 began while transiting from Site U1423 to Site U1424 (proposed site JB-1). We completed the ~98 nmi transit at 0736 h on 25 August. Once thrusters were lowered and the ship was on a stable heading, the same 3-stand advance piston corer (APC)/extended core barrel (XCB) bottom hole assembly (BHA) used at the previous sites was deployed. The drill string was tripped to the seafloor and the bit was positioned at 2806 mbrf for the mudline core. However, this core barrel was recovered empty. The bit was re-positioned at 2816 mbrf for the second attempt and Hole U1424A was spudded at 1525 h on 25 August. Based upon recovery, from the first core, a seafloor depth of 2818.7 mbrf was established. APC coring continued with 17 cores recovered to 158.8 mbsf. With the top drive left in place, the drill string was pulled clear of the seafloor at 0645 h on 22 August, ending Hole U1424A. Coring recovered 161 m of sediment (101%). One temperature measurement was taken using the APCT3 temperature shoe on Core U1423-4H at 35.3 mbsf. This measurement fell exactly on the temperature gradient established during ODP Leg 127 when this site was first cored (Site 794). Therefore, no additional temperature measurements were made at this site.

The ship was offset 15 m north of Hole U1424A and Hole U1424B was started at 0740 h on 26 August. Recovery from Core U1423B-1H established a seafloor depth of 2819.8 mbrf. APC coring continued with 17 cores recovered to 154.7 mbsf. The bit cleared the seafloor at 2035 h on 26 August, ending Hole U1424B. Coring recovered 155.3 m of sediment (100%).

The ship was offset 15 m south of Hole U1424A and Hole U1424C was spudded at 2125 h on 26 August. The operations plan for this hole was amended to conserve valuable operating time. Stratigraphic coverage was exceptional between Holes U1424A and U1424B so operations in Hole U1424C were limited to the recovery of six APC cores to fill in the few gaps in the record. Cores U1424C-1H to -3H were taken for post-expedition optically stimulated luminescence (OSL) dating, and Cores U1424C-4H to -6H for high resolution sampling for geochemical analyses. Hole U1424C was started with the bit was positioned at the same depth as it was for Hole U1424A (2416 mbrf). APC coring extended from the seafloor to 63.9 mbsf. OSL sampling involved special core handling procedures and Hole U1424C was planned intentionally to be cored during the night to minimize the cores exposure to light. Cores U1424C-1H to -3H were cut into 1.5 m whole-round sections directly on the drill floor, just as the core was pulled out of the core barrel, and each section was quickly slipped into opaque aluminum-lined pouches, labeled, sealed, and stored in the refrigerated core storage. The drill string was pulled out of the hole clearing the seafloor at 0320 h on 27 August and was back on the rig floor at 0815 h on 27 August. The rig floor was secured for transit, thrusters were raised, and the sea passage to Site U1425 (proposed site YR-1) began at 0854 h on 27 August.

The 180 nmi distance to Site U1425 was covered in 17.6 h at an average speed of 10.2 kt. The sea passage ended at 0230 h on 28 August. The vessel was maneuvered over the location coordinates, thrusters were lowered into position, and the vessel was turned over to dynamic position control. By 0300 h on 28 August the vessel was stable enough for rig floor operations to begin and a positioning beacon was deployed at 0418 h.

A 3-stand APC/XCB BHA was assembled and the drill string was run to bottom. After picking up the top drive and spacing out the drill string to 1911.4 mbrf (6 m above the observed seafloor depth on the ship's Precision Depth Recorder [PDR]) an APC core barrel was deployed. The first core barrel was recovered empty. The bit was re-positioned 10 m lower at 1901.4 mbrf for the second attempt. Hole U1424A was started at 0905 h on 28 August, however this time the barrel was recovered full; once again missing a reliable seafloor determination. The ship was offset 15 m north, a new APC core barrel deployed, and the bit positioned at 1918.4 mbrf. Hole U1425B was spudded at 1005 h on 28 August establishing a seafloor depth of 1919.1 mbrf. APC/XCB coring continued to a final depth of 407.2 mbsf, the scientific target depth for this site. The coring operation in Hole U1425B consisted of 28 full-length APC cores, 23 half-length APC cores, and 10 XCB cores. We recovered 397.25 m of core (98%). Three successful temperature measurements were taken using the APCT3 temperature shoe on Cores U1425B-4H, -7H, and -10H (37.3, 65.8, and 94.3 mbsf, respectively). The hole was circulated clean, the logging tools moved forward to the rig floor, the top drive was set back, and the drill string was pulled to a logging depth of 80 mbrf. At 1115 h on 30 August preparations for wireline logging were initiated. The Paleo-combo tool string was deployed to the bottom of the hole and recorded spectral gamma ray, caliper, magnetic susceptibility, resistivity, and lithologic density logs. The second string consisted of the FMS-sonic tool string, which recorded resistivity images of the borehole, sonic velocities, and natural gamma data. The FMS-sonic string was reached 396.0 mbsf, 11.2 m off the bottom of the hole (407 mbsf). The logging tools were rigged down and the drill string was pulled clear of the seafloor at 0200 h on 31 August.

After offsetting the ship 15 m south of Hole U1425A, Hole U1425C was spudded at 0355 h on 31 August. Core U1425A-1H recovered 5.95 m establishing a seafloor depth of 1918.9 mbsf. This core was followed by two additional full-length APC cores to 25 mbsf. Because these cores were for OSL sampling they were handled per the protocols established during the last site, taking care to shield the core from any natural or artificial light as much as possible. The drill string was pulled clear of the seafloor at 0540 h on 31 August ending Hole U1425C operations.

The ship was offset 15 m west of Hole U1425A and Hole U1425D was spudded at 0605 h on 31 August. Core U1425D-1H established a seafloor depth of 1919.6 mbrf. Coring continued to a final depth of 431 mbsf alternating between the full- and half-length APC and the XCB core barrels. The coring effort consisted of 26 full-length APC cores, 40 half-length APC cores, and four XCB cores. Core recovery core totaled 417.5 m (98%). Recovery percentages are biased in the last few cores in Hole U1425D because both the XCB and APC-half-coring systems were pushed into dolomite and siliceous claystone horizons that neither coring system was designed to handle. Despite the poor recovery in the last few cores, the coring effort was scientifically successful, obtaining a dateable cored section for the last half-length APC core recovered (Core U1425D-72H). The top drive was set back and the drill string was recovered back aboard the ship. The positioning beacon was recovered during the pipe trip and was back aboard after lunch on 2 September. The BHA was set back in the derrick and the vessel was secured for transit to Site U1426 (proposed site YB-2). This ended operations at Site U1425 (YR-1).

## **Science Results**

Please see Site U1423 Summary.

## Technical Support and HSE Activities

The technical staff was fully engaged supporting coring and science operations at Sites U1424 and U1425.

Laboratory:

- All sections of the Core Laboratory were very busy and running smoothly. No new issues to report.
- Chemistry Laboratory:
  - Scientists reporting some issues with LIMS; developer assisting as necessary.
  - IC non-operational: will not recognize rack; waiting on response from technical support.
  - TOC non-operational: suspect issues with CO<sub>2</sub> detector; waiting on response from technical support.
  - Installing support stand for ampule torch.
- Repairs started on magnetometer tow cable.

The following HSE activities took place:

- Safety preparations were started for tropical storm Kong-Rey but storm dissipated before reaching our drilling area.
- Monitoring tropical storm Kong-Rey north of Taiwan.
- Weekly fire and boat drill held as scheduled, weekly.