

**March 13, 2005**

## **IODP EXPEDITION 306: NORTH ATLANTIC CLIMATE 2 WEEK 1 REPORT**

### **OPERATIONS**

PORT CALL: Expedition 306 began in Ponta Delgada, Azores, at 1805 hours 2 March with the first line ashore ending Expedition305. The JOIDES Resolution arrived dockside ~12 hours behind schedule because of severe weather encountered en route to port and because of pilot delays once reaching the Ponta Delgada pilot station. The 3<sup>rd</sup> Ponta Delgada port call in a row for the JR was completed in 7 days due to delays with the passive heave compensator (PHC) seal replacement, and high winds and heavy rain that significantly hampered (and slowed) the PHC repair work. In addition, the ship's departure was delayed waiting on the port pilot decision on appropriate safe weather conditions. Aside from the normal port call activities, the ship also refueled and took on 18 short tons of Bentonite and 36 short tons of Attapulgitic bulk drilling mud. Jeff Fox, IODP/TAMU Director, attended the port call accompanied by the new TAMU Dean of Geosciences, Dr. Bjorn Kjerfve.

PORT CALL SECURITY & SAFETY: During the Ponta Delgada port call the ship operated under a security level of MARSEC Level 1 (Yellow) and appropriate security measures were in effect. All personnel were required to register with the ship's staff before being allowed on the ship and were also required to wear proper identification at all times. All personnel who had not sailed within the last 6 months were given safety briefings and participated in a safety drill upon their arrival.

TRANSIT TO SITE U1312 (Prospectus Site IRD-4A): The last line away from Berth 12, Ponta Delgada, Azores, was at 0806 hr on 9 March, ~1.8 days behind the scheduled departure time. The pilot was dispatched at 0815 hrs and the vessel was underway at full speed on a course of 024°T for Site U1312. The transit was uneventful with the ship rolling/pitching moderately while averaging 10.3 knots over the 344 nm distance. During the transit preparations were made for oriented non-magnetic APC coring operations. Thrusters were lowered at 1730 hr 10 March. The vessel was placed in dynamic positioning (DP) mode by 1750 hr and hydrophones were lowered.

HOLE U1312A: A Datasonics positioning beacon SN 2199, 15.0 kHz, 211dB was deployed at 1823 hr officially marking the beginning of on-site operations for Hole U1312A. The precision depth recorder (PDR) provided a seafloor depth of 3541.0 m corrected to the rig floor dual elevator stool (DES). The first drill string deployment was slowed as usual due to the need for picking up drill collars and strapping (measuring)/drifting (verifying minimum internal bore diameter) all tubular components. A 2-stand APC bottom hole assembly (BHA) was used for all coring. After tripping the drill string to bottom the top drive and 30 foot knobby drilling joint were picked up and the drill string was spaced out placing the bit at 3533.0 mbrf or ~ 8.0 meters above the PDR reading. Hole U1312A was spudded at 0830 hr 11 March and core barrel 1H was recovered full (10.08 m). Because vessel heave was significant at the time (5+ meters) we elected to continue coring operations from that point assuming a seafloor depth of 3533.0 mbrf. Hopefully a more accurate seafloor depth will be determined later, under lower heave conditions, when spudding holes U1312B and U1312C.

Because of the excessive heave, initial coring conditions were not optimum. The first several cores (through 10H to 95.0 mbsf) had questionable shear pressures and Core 1H required 2 wire line runs to recover because of a sheared overshot pin. It is believed that several of the initial core barrels may have sheared prematurely during deployment. After Core 10H the

swell height began to diminish and coring system performance improved accordingly. Coring in Hole U1312A was terminated after recovering Core 25H from a depth of 237.5 mbsf. Drill over for this last core required 2 hours in the semi-indurated white chalk and core barrel 23H was recovered bent. Coring may have continued further; however, the risk to equipment was significant, the time required for further advancement was reaching a diminishing return, and the co-chief scientists were concerned about getting Hole 1312B initiated while heave conditions remained low (~1.5 m). This would enable us to hopefully verify a more accurate mudline for the drill site as well as obtain higher quality cores of the upper part of the section. Our original target depth for this site was 300 mbsf (or APC refusal) with the intent to recover entire continuous Upper Miocene section. It is believed at this time that the penetration depth of Hole 1312A did indeed extend through the entire Upper Miocene.

Tensor core orientation was used for all cores beginning with Core 3H and "drill over" techniques were required for recovery of Cores 23H through 25H and all core barrels fully stroked. The first 22 cores (to 209.0 mbsf) were recovered using non-magnetic core barrels. The drill string was pulled clear of the seafloor at 1725 hr Saturday, 12 March officially ending Hole U1312A. The cored interval for this hole was 237.5 m while 248.07 m were recovered for an average recovery of 104.5%.

HOLE 1312B: After clearing the seafloor the vessel was offset 25 m on a course of 315°. Hole 1312B was spudded at 2115 hr with the bit positioned at a depth of 3528.0 mbsf, 5.0 m higher than at Hole U1312A. Core barrel 1H advanced 9.5 m and recovered 3.92 m of core placing the seafloor depth for Hole 1312B at 3533.6 mbsf. As of 0020 hr Sunday, 13 March, coring has progressed to a depth of 32.4 mbsf through Core 4H and recovery is averaging 103.4%.

### **SCIENCE SUMMARY**

The science party arrived onboard on March 3<sup>rd</sup>. Safety indoctrination was held for all participants. Organizational meetings and laboratory orientation continued throughout the port call. Science working shifts began immediately after the ship's departure from Ponta Delgada on March 9<sup>th</sup>. Science meetings, and sedimentologic description and software training continued throughout transit to Site 1312.

### **PRELIMINARY SCIENTIFIC RESULTS FROM SITE U1312 (IRD4A), HOLE A:**

The sedimentary sequence recovered at Hole U1312-A, represents the last ~11 millions years based on nannofossil stratigraphy (Zones NN21 to NN7). The main lithologies recognized are very pale brown, yellowish brown, pale yellow, and white nannofossil and foraminifer nannofossil ooze with minor amounts of clastic (silty clay to clay) material. Below about 50 mbsf, white (foraminifer) nannofossil ooze is predominant. Occasionally, thin greenish and light gray laminae occur. A very prominent graded foraminifer sand occurs at 118.1-118.8 mbsf. This layer also was recorded at DSDP Site 608A at almost the same depth (119.9-120.4 mbsf). The Brunhes/Matuyama, Matuyama/Gauss, and Gauss/Gilbert boundaries are identified at ~ 18.4, 47, and 57.5 mbsf, respectively.

### **TECHNICAL SUPPORT AND HSE ACTIVITIES**

Because of the 12-hour weather delayed arrival of the ship in Ponta Delgada, the technical cross over was short and informal, mostly at an evening get together. The Lab Officer, one of the Assistant Lab Officers and a System Manager stayed an extra day or two to help with the transfer of information and to assist with Expedition 305 shipments. All IODP freight was received and dispersed. The technical group loaded and distributed the laboratory and scientific equipment and supplies.

A get acquainted and orientation meeting was held in port to introduce the technical staff to the science party and to inform individuals about life at sea aboard the JR. The Bridge Officers made safety and orientation presentations to new personnel prior to sailing. Storm canvas was lashed in place to protect the core receiving platform from the cold weather expected on this expedition. A field trip to visit some of the geological features on the island was made though heavy rain limited its scope.

TRANSIT: Internet service was lost during transit as the satellite antenna was shaded by the derrick. Short course changes a couple times a day maintained communication. Control of the multisensor track sensors has been moved to one computer and all sensors to be used on the expedition are calibrated and ready for use. There is a control card issue to be resolved before the full complement sensors can be used together. IODP and ODL technicians worked on preparing lab/ship equipment and installing hardware required for upgrading the ship's television to a UHF system, which will provide additional channels, improved picture quality, and a discrete and dedicated channel for each camera aboard ship.

LABORATORY STATUS: The GEOTEK dual sensor magnetic susceptibility core logger ("FastTrack") was installed in the core lab, parallel to the cryogenic magnetometer and then tested. Spurious occasional negative spikes were noted again during the testing. The cause of the spikes is being examined. The AMST computer has been crashing frequently and the problem is being examined. JANUS code that was altered last expedition nulling magnetic susceptibility data needed for the SPLICER program has been changed. Testing and evaluating the Mettler balance as a replacement for the Scientech continues. All other lab instrumentation has been tested and calibrated.