IODP Expedition 395E: Complete South Atlantic Transect Reentry Systems

Week 3 Report (18–24 April 2021)

Operations

Transit

Week 3 of Expedition 395E, Complete South Atlantic Transect Reentry Systems, began on 18 April 2021 with the *JOIDES Resolution* in transit to Site U1560 (proposed Site SATL-25A) at 11.1 kt with 1096 nmi remaining. The ship's clock was set back at 0200 h, putting the ship at UTC + 0 h (5 h ahead of College Station). The ship will stay in this time zone for the rest of the expedition. We arrived at Site U1560 (proposed Site SATL-25A) at 0108 h on 22 April, completing the 1817 nmi transit from Cape Town. The thrusters were lowered and the ship switched to dynamic-positioning mode at 0215 h, starting operations for Site U1560.

Hole U1560A

The advanced piston corer/extended core barrel (APC/XCB) bottom-hole assembly (BHA) was made up and we started lowering the drill bit to the seafloor at 0945 h. During the descent, the brakes on the drawworks unit were found to be slipping, and tripping was paused several times for adjustments. The drill string deployment was stopped at 1900 h to inspect the brakes. Everything appeared normal, except the bands appeared to be dusty. The bands were washed off and the covers reinstalled. The brakes operated normally after this. One possible reason was these are relatively new bands, installed for Expedition 390C, and had not been used under high load for several months. The dust may have been from the initial break-in. Tripping resumed at 2250 h to 3708 m below sea level (mbsl). We pumped two pigs (pipe cleaning devices) through the drill string to remove rust. The first APC core was shot from 3714 mbsl but returned empty, missing the mudline, so the drill bit was lowered 5 m for the next attempt.

We spudded Hole U1560A at 0405 h on 23 April. Mudline Core U1560A-1H arrived on deck at 0430 h and recovered 4.7 m, establishing a seafloor depth of 3723.7 mbsl for Hole U1560A (30°24.2064′S, 16°55.3718′W). Cores U1560A-2H to 11H advanced from 4.6 to 99.7 m below seafloor (mbsf). Cores U1560A-1H to 11H recovered 101.55 m (102%). All APC cores were oriented with the core orientation tool (Icefield MI-5). Formation temperature measurements were taken on Cores 4H and 7H with the advanced piston corer temperature tool (APCT-3).

At 1730 h we changed to the XCB coring system, because we were approaching the anticipated basement depth. We used the polycrystalline diamond compact (PDC) XCB cutting shoe that had proven successful at recovering basement material during Expedition 390C. Cores U1560A-12X to 14X advanced from 99.7 to 120.1 mbsf and recovered 17.09 m (84%). During Core U1560A-15X, a slowing in the drilling rate (to ~0.6 m/h) indicated that the basement contact was reached at 120.2 mbsf. Cores U1560A-15X and 16X advanced from 120.1 to 122.5 mbsf and recovered 0.44 m (18%). Upon recovery, these two cores were confirmed to be basement. The rate of penetration in this solid formation was slow (~0.6 m/h), so we stopped coring at this point. We

raised the drill bit up to the ship, and it cleared the rig floor at 1520 h on 24 April, ending Hole U1560A. Cores U1560A-1H to 16X recovered 119.08 m (97%). The total depth for Hole U1560A was 122.5 mbsf and total time was 61.05 h (2.5 d).

Hole U1560B

The rest of 24 April was spent preparing to install the reentry system in Hole U1560B. The nonmagnetic drill collars were laid down, and the upper guide horn (UGH) was removed. At 1745 h we started making up the hydraulic release tool (HRT) BHA.

Science Results

Cores U1560A-1H through 13X have been split and measured on the track systems. In addition, we took 1–2 whole-round samples per core for chemical analysis of interstitial water (IW). Cores 14X through 16X will not be split during Expedition 395E but they were measured on the whole-round track systems. No core description will occur during Expedition 395E.

Outreach

No onboard Outreach Officer is sailing during Expedition 395E. Social media posts were made via the JR Facebook (https://www.facebook.com/joidesresolution) and Twitter (https://twitter.com/TheJR) accounts, run by the JRSO technical staff.

We held an outreach event with girl scouts in Minnesota via Zoom.

Technical Support and HSE Activities

Laboratory Activities

- Processed whole-round and split cores from Hole U1560A in the Core Laboratory.
- Tested the 3.5 kHz transducer during transit and received a good seafloor profile and subsurface penetration when arriving on site in 3600 m water depth.
- Cross-trained in the Chemistry Laboratory on the gas chromatograph (GC) and IW sample processing.
- Completed instrument cross-training in the Core Laboratory prior to core on deck and trained staff on catwalk procedures.
- Updated instrument control software (IMS) configuration documents for the whole-round tracks as well as the Section Half Multisensor Logger (SHMSL) and Section Half Imaging Logger (SHIL).
- Adapted PmagPy scripts to accept LORE exports in order to analyze orientation data.

- Updated the IMS U-turn program on the superconducting rock magnetometer (SRM) and completed testing.

IT Support Activities

- Resolved a Matlab license server problem by adjusting the firewall configuration.
- Updated the Downhole Measurements Laboratory PC so it reads orientation tool data.
- Planning migration from ZENworks 2011 to ZENworks 2020 software update server.
- Rigwatch software is now operational after fixing an IP configuration conflict.
- Held a Spot Check for Risk Assessment.
- Falcon Sensor security software has been updated on PCs and Macs. Troubleshooting is ongoing for workstations that did not update.

Developer Activities

- Resolved issue with Virtual Photo Table not working due to guest account privileges.
- Continued working on GEODESC Template Manager.

HSE Activities

- COVID-19 safety procedures continued to be followed throughout the week.
- Safety shower and eye wash stations were tested.
- Two separate abandon ship drills were conducted for Siem/Entier and JRSO staff.