Figure F1. IODP conventions for naming sites, holes, cores, sections, and samples, Expedition 391.

Figure F2. RCB coring system, Expedition 391. ID = inside diameter, OD = outside diameter. Modified from Graber et al. (2002).

Figure F3. RCB BHA. ID = inside diameter. Modified from Graber et al. (2002).

Figure F4. Example VCD and lithology patterns, symbols, and nomenclature used for VCDs, Expedition 391. cps = counts per second.

Figure F5. Sediment classification scheme used during Expedition 391 (modified after Mazzullo et al., 1988, following Expedition 330 Scientists, 2012b).

Figure F6. Classification of siliciclastic sediments used during Expedition 391 (after Sun et al., 2018).

Figure F7. Wentworth grain-size classification used during Expedition 391 (after Sun et al., 2018).

Figure F8. Nongenetic classification of lavas and primary (pyroclastic) and secondary (epiclastic) volcaniclastic deposits used during Expedition 391 (after Expedition 324 Scientists, 2010a).

Figure F9. Genetic classification of lavas and primary (pyroclastic) and secondary (epiclastic) volcaniclastic deposits derived from volcanic effusive, volcanic explosive, and postdepositional reworking (sedimentary) processes used during Expedition 391 (after Expedition 324 Scientists, 2010a).

Figure F10. Cross section of an idealized pillow basalt flow unit with features commonly seen in pillow lavas at Expedition 391 sites.

Figure F11. Vein fill texture, Expedition 391.

Figure F12. Example igneous VCD, Expedition 391. cps = counts per second.

Figure F13. Clast angularity, Expedition 391.

Figure F14. Core reference frame and coordinates used in orientation data calculations, Expedition 391.

Figure F15. Example log sheet for structural and orientation data and observations from archive halves, Expedition 391.

Figure F16. Method for logging structures, Expedition 391.

Figure F17. Goniometer used to measure dip and dip direction of planes in split cores, Expedition 391.

Figure F18. Core reference frame and method for measuring orientation of planar features, Expedition 391.

Figure F19. Calculation of plane orientation (shaded) from two apparent dips, Expedition 391. Intersections of split core surface, section perpendicular to split core surface, and section parallel to core direction with plane of interest are shown. (α_1, β_1) and (α_2, β_2) = azimuths and apparent dips of traces of the plane on two sections, V_1 and V_2 = unit vectors parallel to traces of the plane on two sections, V_n = unit vector normal to plane.

Figure F20. Dip direction (α_d), right-hand rule strike (α_s), and dip (β) of a plane deduced from its normal azimuth (α_n) and dip (β_n), Expedition 391. v_n = unit vector normal to plane. A. $\beta_n < 0°$. B. $\beta_n \geq 0°$.

Figure F21. IODP paleomagnetic reference frame, Expedition 391. The *x*-, *y*-, and *z*-axes are shown on (A) the working- and archive-half sections and (B) a discrete cubic sample. C. Orientation of the section halves or discrete samples when loaded into the SRM.

Figure F22. Mass percentages, Expedition 391. Left: Total weight percentage vs. SiO_2. Total weight percentage is correlated with SiO_2, suggesting that the low total mass percentages problem was caused by sample loss during sample preparation. Right: SiO_2 calibration curve of ICP measurement. Red dots = standard reference materials, yellow dots = low total samples. Dashed line = regression line of the standard reference materials ($R^2 = 0.95$). SiO_2 raw data of the low SiO_2/total samples are lower than most of the reference standard samples, so SiO_2 contents of these samples are obviously lower regardless of the calibration curve. Therefore, the low total issue was not caused by a calibration problem.

Figure F23. Some beads melted during Expedition 391 contained black materials inside (red circles) and yielded low total mass percentage values, indicating that the low total problem was most likely caused by trouble with the bead sampler. A. 391-U1575A-23R-2, 44–46 cm. B. 24R-2, 101–103 cm. C. 25R-1, 13–15 cm.

Figure F24. Seawater baths, Expedition 391. A. Insulated box used to minimize thermal disturbances from air and water currents during thermal conductivity measurements on whole rounds and section halves. B. Plastic tub filled with seawater used for measuring small (>20 cm) hard rock pieces. A half-space standard puck is placed on seawater-saturated hard rock sample, secured by an elastic band, and stabilized using a metal stand. Seawater covers the interface between the sample and the puck.

Figure F25. SHMG, Expedition 391. The AVS system measures the shear strength of soft-sediment section halves. The PWB measures *P*-wave velocity in the *y*- and *z*-directions, and the PWC measures *P*-wave velocity in the *x*-direction. AVS, PWB, and PWC measurements are exclusively recorded on soft-sediment section halves, but the PWC also measures the *P*-wave velocity of discrete hard rock cube and wedge samples in the *x*-, *y*-, and *z*-directions.

Figure F26. Seawater vacuum chamber used to saturate discrete cube and wedge samples prior to *P*-wave velocity and wet mass MAD measurements, Expedition 391.