Figure F1. Lithostratigraphic summary and physical properties, Hole U1566A. cps = counts per second. F1, F2, F3, etc. = basaltic lava flow subunits.

Figure F2. Grayish brown clay with sand and nodules at the base of Unit I, Hole U1566A.

Figure F3. Distinct lava flow subunits alternating with sedimentary subunits in Unit I, Hole U1566A. All observed chilled margins are indicated. (Continued on next six pages.)

Figure F4. Chilled margins and breccias observed in Unit II, Hole U1566A.

Figure F5. Igneous lithologies observed in Unit II, Hole U1566A.

Figure F6. Variation of vesicularity observed across Unit II basalts, Hole U1566A.

Figure F7. Example of flow banding associated with variation in the crystallinity and vesicularity within a lava flow, Hole U1566A.

Figure F8. Microstructure of Unit II lava flows, Hole U1566A. A, B. Vesicle fills: (A) partial fill (7R-2, 78–80 cm; plane-polarized light [PPL]); (B) complete fill (6R-2, 39–41 cm; cross-polarized light [XPL]). C, D. Flow textures: (C) subparallel arrangement of elongated vesicles (7R-3, 68–70 cm; PPL); (D) contact between cryptocrystalline and microcrystalline groundmass (8R-1, 35–37 cm; XPL). E, F. Mineralogy of the aphyric basalt groundmass: (E) anhedral clinopyroxene (8R-1, 35–37 cm; XPL); (F) cluster of plagioclase microlites (6R-2, 39–41 cm; XPL). G, H. Microphenocrysts: (G) subhedral tabular plagioclase (7R-3, 68–70 cm; XPL); (H) euhedral equant grains of clinopyroxenes (19R-2, 137–140 cm; XPL). Zeo = zeolite, sap = saponite, cal = calcite, pl = plagioclase, cpx = clinopyroxene.

Figure F9. Chemical stratigraphy of Unit II basalts, Hole U1566A. Mg# = Mg/(Mg + Fe^{2+})*100, assuming FeO/Fe_2O_3 = 0.85 (Tegner et al., 1998). See Lithostratigraphy in the Expedition 396 methods chapter [Planke et al., 2023a] and Geochemistry for details.

Figure F10. Main facies of Unit II sediments, Hole U1566A. A. Red clay-rich sandstone and basalt-derived matrix-supported brown conglomerates. B. Dark gray conglomerates transitioning to wood fragments and very dark gray claystone with organic matter. C. Pinkish brown claystone with clasts. D. Very dark brown clast-supported breccia and very dark brown claystone with gravel. E. Yellowish brown clast-supported sandstone with gravel. F. Unit III granite-derived sandstone.

Figure F11. Granite, Hole U1566A. Top: comparison between weakly altered granite with biotite (left) and decomposed granite (right). Bottom: weakly altered granite showing its main mineralogy (XPL). Pl = plagioclase, bt = biotite, qtz = quartz, fsd = feldspar.

Figure F12. Palynomorphs, Sample 396-U1566A-11R-1, 125–129 cm. A. *Montanapollis* sp. B. *Montanapollis* sp. C. *Phthanoperidium* sp. D. *Tasmanites* sp.

Figure F13. Magnetic parameters measured on the SRM, Hole U1566A. Red circles = measurement artifacts.

Figure F14. Magnetic inclination from SRM showing dominantly reverse polarities with minor normal intervals in Unit II, Hole U1566A.

Figure F15. Magnetic coercivity parameter measured on the SRM, Hole U1566A.

Figure F16. Top left: stereonet of paleomagnetic directions from AF demagnetization of NRM, Sample 396-U1566A-4R-1, 88–90 cm (basalt/picrite). Red dots = TRM component. Top right: orthographic projection of demagnetization experiments. Bottom: normalized magnetic intensity of the corresponding section measured on the SRM.

Figure F17. Top left: stereonet of paleomagnetic directions from AF demagnetization of NRM, Sample 396-U1566A-19R-3, 116–118 cm (basalt). Top right: orthographic projection of demagnetization experiments. Bottom: magnetization intensity as a function of applied field in AF demagnetization experiments.

Figure F18. IW chemical profiles, Hole U1566A. IC = ion chromatograph.

Figure F19. Volcanic rocks, Site U1566. A. Total alkali vs. silica (TAS) (Le Maitre IUGS 1989 normalized to 100% water free; Le Maitre, 1989). B. V vs. Ti (5.10 for basalts) (Shervais, 1982). C. Ti vs. Zr (5.2a Thol. basalts with CaO + MgO 12%–20%). IAT = island-arc tholeiites, CFB = continental flood basalt, MORB = mid-ocean-ridge basalt, BAB = back-arc basin basalt, CAB = calc-alkaline basalt.

Figure F20. (A) Mg# vs. TiO_2 and (B) Mg# vs. SiO_2, Site U1566.

Figure F21. (A) Alkali-lime index (Na_2O + K_2O – CaO) vs. SiO_2 and (B) FeO*/(FeO + MgO) vs. SiO_2, Site U1566.

Figure F22. Deconvolved NGR spectra, Hole U1566A.

Figure F23. Calcium carbonate profile, Hole U1566A.

Figure F24. Physical properties summary, Hole U1566A. Whole-round, section-half, and discrete measurement results are included. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F25. Physical properties summary, Cores 396-U1566A-1R through 3R. A shallow clay dominated sequence with ~30% recovery is shown. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F26. Expanded physical properties measurements for Hole U1566A showing the basal volcanic transition into granitic basement. Highlighted are several interlava granite-derived sedimentary beds, which become more dominant toward the base of the lava sequence. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, G. = SHMG, WR = WRMSL.

Figure F27. Physical properties summary for the granitic basement interval, Hole U1566A. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, G. = SHMG, WR = WRMSL, GR = gamma ray.

Figure F28. Summary of wireline log traces for the main open hole logged interval, Hole U1566A. LCAL = caliper, HSGR = total spectral gamma ray, RLA = resistivity, RT_HRLT = true resistivity, V_S = *S*-wave sonic velocity, MSS = Magnetic Susceptibility Sonde, IU = uncalibrated instrument units.

Figure F29. Wireline GR and MS compared to core-based physical properties, Hole U1566A. An expanded GR log scale highlights fine-resolution variations within the basalt sequence for wireline GR. Wireline data is plotted on the WMSF depth scale, whereas core-based data is plotted on the CSF-A depth scale; the depths are not matched. r = 50 cm running average. LCAL = caliper, HSGR = total spectral gamma ray, MSS = Magnetic Susceptibility Sonde, IU = uncalibrated instrument units.

Figure F30. RHOM, PEF, V_P, and calculated AI compared to core-based physical properties, Hole U1566A. Wireline data is plotted on the WMSF depth scale, whereas core-based data is plotted on the CSF-A depth scale; the depths are not matched. r = 50 cm running average. G. = Section Half Measurement Gantry, LCAL = caliper.

Figure F31. Logging Unit 2 FMS image log data alongside GR, resistivity, and UBI image log data, Hole U1566A. Brighter colors relate to high resistivity, and darker colors are more conductive. For the UBI, brighter colors are higher amplitude and darker colors are lower amplitude. Poor or null FMS data intervals are flagged in red. HSGR = total spectral gamma ray, LCAL = caliper, RLA = resistivity, RT_HRLT = true resistivity.

Figure F32. FMS and UBI image log highlights from a sequence of basaltic lava flows within Logging Unit 2, Hole U1566A. Comments are linked to the higher resolution FMS log data.