**Figure F1.** Site map. Red = Site U1590, yellow = other sites. Inset: location map. See Figure F1 in the Site U1589 chapter (Druitt et al., 2024) for citations for the swath data on which this map is based. KVC = Kolumbo volcanic chain.

**Figure F2.** Seismic profile across the Kolumbo Volcano along Seismic Line HH06-22. Units K1–K5 (K1 is deeper and not shown) are related to the construction of Kolumbo Volcano, K5 being the edifice of the 1650 CE eruption. Strata intercalated with K1–K5 contain marine sediments and volcaniclastic layers from Santorini. Depths in meters. TWT = two-way traveltime.

**Figure F3.** Lithostratigraphic summary, Site U1590. Subunits are further characterized in Figures F4 and F5. The interpreted lithology column for Unit II is particularly speculative given the very low recovery at this site, and care should be taken in making interpretations from it.

**Figure F4.** Relative percentages of volcanic, tuffaceous, and nonvolcanic lithologies in Units I and II, Site U1590. Note the dominance of volcanic material in Unit I compared to Unit II, although this may be a function of poor recovery.

**Figure F5.** Average grain size distribution, Site U1590. Length of colored bars = relative grain sizes (ash = <2 mm; lapilli = 2–64 mm; mud = <63 µm; sand = 0.63–2 mm). Mixed lithologies such as lapilli-ash that have relative grain sizes between two categories are plotted between ticks.

**Figure F6.** Core disturbances, Site U1590. A. Fall-in. B. Water-saturated, granular core sections severely disturbed by sediment mixing. C. Biscuiting. D. Cracking and breaking.

**Figure F7.** Common lithologies in Unit I, Hole U1590A. A. Thin ash layer intercalated between surface brown mud and gray tuffaceous mud in Subunit Ia. B. White and gray pumice (lower part of Subunit Ia) (white and black arrows = exemplary white and gray pumice clasts). C. Ash interval (Subunit Ib). D. Ooze with ash-pod interval (upper part of Subunit Ic). E. White and biotite-bearing, gray, and pink lapilli-sized pumice (lower part of Subunit Ic).

**Figure F8.** Common lithologies in Unit II, Hole U1590B. A. Portion of a thick (1.7 m) organic-rich (sapropelic) calcareous mud. B. Highly bioturbated ooze. C. Tuffaceous ooze overlying an 11 cm thick ash layer; both are highly bioturbated. D. Tuffaceous mud with scoria lapilli and 1–1.5 cm bioclasts (shells). E. Coarse pumice lapilli; this lithology was poorly recovered in Hole U1590B and is likely abundant in the unrecovered intervals.

**Figure F9.** XRD spectra of selected IW squeeze cake sediment residues, Hole U1590A. A. Ash, lapilli-ash, and lapilli. B. Calcareous tuffaceous mud. C. Ooze. D. Organic-rich mud. Gl = glauconite, Pl = Ca-rich plagioclase, Di = diopside, Hal = halite, Il = illite, Qtz = quartz, cc = calcium carbonate (calcite and aragonite), Ze = zeolite, Chl = chlorite, Ank = ankerite.

**Figure F10.** MS, NGR, and GRA density, Site U1590. Gaps between core intervals are shown. cps = counts per second.

**Figure F11.** Dip data of structures, Site U1590.

**Figure F12.** Age-depth plot and integrated biochronology, Site U1590. CN = calcareous nannofossil, PF = planktonic foraminifer. Biohorizons correspond to those given in Tables T3 and T4. Biohorizons denoted with a question mark are not fully constrained and are interpolated.

**Figure F13.** Calcareous nannofossils, Site U1590. 1, 2. *Emiliania huxleyi* (Lohmann) Hay and Mohler (1: 398-U1590A-8H-CC, 6–9 cm; 2: 9H-2, 74–76 cm). 3. *Pseudoemiliania lacunosa* (Kamptner) Gartner (398-U1590B-28R-CC, 0–4 cm). 4. *Gephyrocapsa* sp. 3 (39R-CC, 7–8 cm). 5. *Reticulofenestra asanoi* Sato and Takayama (41R-CC, 0–2 cm).

**Figure F14.** Foraminiferal oceanicity and paleowater depth estimates, Site U1590. Blue colors show relationship between oceanicity index and paleowater depth. Observers: AW = Adam Woodhouse, OK = Olga Koukousioura. NA = not applicable.

**Figure F15.** Biochronology and interpreted oceanicity and paleowater depths, Site U1590. CN = calcareous nannofossil, PF = planktonic foraminifer. Solid line/red points = oceanicity, dashed line = extrapolation through barren/unreliable sample data. Light blue points/shading = shallower paleowater depth interpretation, dark blue points/shading = deeper paleowater depth interpretation. Oceanicity from Hayward et al. (1999).

**Figure F16.** Planktonic foraminifera, Hole U1590A. A. *Globigerina bulloides*. B. *Globoturborotalita rubescens*. C. *Neogloboquadrina incompta*. D. *Globigerinoides ruber*. E. *Globigerinoides elongatus*. F. *Globigerinoides ruber* var. pink (scale bar = 200 µm). G. *Globigerinella siphonifera*. H. *Globigerinella calida*. I. *Hirsutella scitula*. J. *Tenuitellita iota*. K. *Truncorotalia crassaformis* (sinistral). L. *Turborotalita quinqueloba*. (A, I: 7H-1, 132–134 cm; B–H: 1H-1, 5–7 cm; J–L: 11H-1, 104–106 cm).

**Figure F17.** Benthic foraminifera, Hole U1590A. A, B. *Hoeglundina elegans*: (A) umbilical view; (B) spiral view. C. *Pyrgo elongata*. D. *Amphicoryna scalaris*. E. *Hyalinea balthica*. (A, B, E: 7H-1, 132–134 cm; C: 6H-CC, 14–19 cm; D: 4H-2, 75–77 cm).

**Figure F18.** Archive-half section magnetic data, Site U1590. MDF = median destructive field. Red dashed lines = GAD inclinations expected at this site.

**Figure F19.** AF demagnetization of discrete samples and archive-half sections, Site U1590. Solid circles = projection onto horizontal plane, open circles = projection onto vertical plane. NRM = natural remanent magnetization.

**Figure F20.** Physical properties, Hole U1590A. Dots = whole-round measurements, open symbols = discrete samples. Discrete *P*-wave velocity is in the *x*-direction. cps = counts per second.

**Figure F21.** Physical properties, Hole U1590B. Dots = whole-round measurements, open symbols = discrete samples. cps = counts per second.

**Figure F22.** Discrete measurements, Hole U1590A. Dashed lines = AVS measurement limits, solid lines = PP measurement limits.

**Figure F23.** Discrete measurements, Hole U1590B. Solid lines = linear regression fits based on measurements deeper than 200 mbsf for bulk density and data from both holes for *P*-wave velocity and thermal conductivity.

**Figure F24.** ICP-AES analyses of selected volcaniclastic units used to discriminate between potential volcanic sources, Site U1590. A. Total alkali vs. $SiO_2$ plot with the rock nomenclature of Le Maitre et al. (2002) overlain used for sample naming. Ol = olivine. B. Ba/Y vs. Ba/Zr plot used to correlate samples following Kutterolf et al. (2021).

**Figure F25.** IW salinity, alkalinity, and pH values, Site U1590. Dashed lines = unit boundaries.

**Figure F26.** IC and ICP-AES concentrations of $Br^-$, $Cl^-$, $Na^+$, B, $Ca^{2+}$, $Mg^{2+}$, $K^+$, and $SO_4^{2-}$ in IW samples, Site U1590. Dashed lines = unit boundaries.

**Figure F27.** ICP-AES concentrations of Ba, Li, Mn, Sr, and Si in IW samples, Site U1590. Dashed lines = unit boundaries.

**Figure F28.** TOC and carbonate, Site U1590. Dashed lines = unit boundaries. Sapropel conventions follow Kidd et al. (1978).