Figure F1. Site map. Red = Site U1599, yellow = other sites. Inset = location map. See Figure F1 in the Site U1589 chapter (Druitt et al., 2024a) for the swath data on which this map is based. KVC = Kolumbo volcanic chain.

Figure F2. Seismic profile across the Anhydros Basin along Seismic Line HH06-16. Insets: location of Site U1599 and Holes U1599A–U1599C. Depths in meters. TWT = two-way traveltime.

Figure F3. Lithostratigraphy, Site U1599. Lithostratigraphic Unit I is divided into four subunits that are further characterized in Figures F4 and F5. Unit color = dominant lithology.

Figure F4. Relative percentages of volcanic, tuffaceous, and nonvolcanic lithologies, Site U1599.

Figure F5. Grain size distributions of volcanic, tuffaceous, and nonvolcanic sediments. Length of colored bars = relative grain size (ash = <2 mm; lapilli = 2–64 mm; mud = <63 µm; sand = 0.063–2 mm), with separate scales shown for volcanic grain size (top) and nonvolcanic grain size (bottom; used for tuffaceous and nonvolcanic sediments). Mixed lithologies such as lapilli-ash (dark pink) that have relative grain sizes between two categories are plotted between ticks.

Figure F6. Core disturbances, Site U1599. A. Uparching. B. Crack. C. Mixed sediments. D. Soupy. E. Sediment flowage. F. Core voids. G. Fall-in. H. Biscuiting.

Figure F7. Common lithologies from Unit I, Site U1599. A. Tuffaceous ooze with underlying 2 cm thick fine ash and ooze with ash pods. B. Lithic lapilli and lapilli. C. Organic-rich ooze with ash layers overlying ooze with organic material. D. Beautiful white lapilli.

Figure F8. Representative lithologies from Unit I, Site U1599. (A) Ooze with ash and (B) ash (Subunit Ia), (C) organic-rich ooze and (D, E) crystal-rich ash (Subunit Ib), and (F) ooze (Subunit Id).

Figure F9. A. Normally graded lapilli to lapilli-ash to ash succession extending over several core sections (Subunit Ib), bounded between two ooze intervals (398-U1599A-7H). B. Three core sections showing the grain size change from lapilli at the bottom (7H-7) to lapilli-ash (7H-3) to ash at the top (7H-1).

Figure F10. Common lithologies from Unit II, Hole U1599C. A. Ooze with slight bioturbation (*Zoophycos* traces). B. Organic-rich ooze intercalated with a 13 cm thick ash layer. C. Organic-rich ooze.

Figure F11. Representative lithologies from Unit II, Hole U1599A. A. Ash. B. Calcareous tuffaceous sand.

Figure F12. Common lithologies from Unit III, Hole U1599C. A. Organic-rich marl overlying dolomitic marl. B. Dolomitic marl with scoria. C. Organic-rich marl and sandstone with moderate bioturbation. D. Dolomitic sandstone with plant fragments.

Figure F13. Representative smear slides from Unit III, Site U1599. (A) Dolomitic marl (Subunit IIIa), (B) dolomitic marl with ash (Subunit IIIb), and (C) dolomitic sandstone and (D) dolomitic marl (Subunit IIIc).

Figure F14. Common lithologies from Unit IV, Hole U1599C.

Figure F15. Unit IV ash, Hole U1599C.

Figure F16. Correlations in Unit I between Holes U1599A and U1599B. A. Lapilli-ash layer with a sharp lower contact to underlying ooze. B. Double ash layer. C. Interval of thinly laminated organic-rich ooze with a sharp lower boundary. D. Organic-rich ooze highly bioturbated by *Zoophycos* with tunnel-shaped, slightly inclined burrows. E. ~10 cm thick fine ash layer with a relatively sharp lower boundary and a diffuse and gradational upper boundary.

Figure F17. Correlations in Unit II and between Holes U1599A, U1599B, and U1599C. A. Dark gray coarse ash directly above greenish gray ooze. B. Sharp boundary between organic-rich ooze and ooze.

Figure F18. XRD spectra of Unit I–III lithologies, Site U1599. A. Ooze (Subunit Ia). B. Tuffaceous ooze (Subunit Ic). C. Calcareous tuffaceous mud (Unit II). D. Dolomitic marl (Unit III). Il = illite, Qtz = quartz, Cc = calcium carbonate (calcite, aragonite), Pl = Ca-rich or Na-rich plagioclase, Sm = smectite (montmorillonite), Gl = glauconite, Chl = chlorite, Dol = dolomite.

Figure F19. WRMSL-derived MS data, Holes U1599A–U1599C. MS data are on the CCSF-A depth scale in the interval where the holes overlap (see also Physical properties).

Figure F20. Splice, Site U1599. MS, NGR, and GRA density, as well as the respective spliced core interval from Holes U1599A–U1599C, are shown (see also Physical properties). Yellow shading = overlapping depth sections.

Figure F21. CCSF-A versus CSF-A core top depths, Holes U1599A and U1599B. Lines fit through the core top depths of all holes give an estimate of the core expansion. At Site U1599 this is estimated to be approximately 9%.

Figure F22. Dip data, Site U1599. Lithostratigraphic subunits are described in Lithostratigraphy.

Figure F23. Box plots of bedding dip distribution, Site U1599. The minimum (P5), first quartile (P25), median value (P50), third quartile (P75), and maximum (P95) are shown. Only the first outlier smaller than P5 and larger than P95 is plotted as a dot. Md = median dip. N = number of samples. P = percentile. Lithostratigraphic subunits are described in Lithostratigraphy.

Figure F24. Normal faults, Hole U1599C. Arrows = fault positions and sense of shear direction. A. Normal fault (37R-4, 95–107 cm). B–E. Conjugate normal fault system (B: 37R-5, 21–35 cm; C: 49R-1, 122–134 cm; D: 49R-4, 2–15 cm; E: 49R-5, 38–51 cm).

Figure F25. Sand dikes, Hole U1599C (black arrows). A, B. Sand dikes representing pure-tensile fracture (A: 36R-2, 35–47 cm; B: 39R-6, 108–121 cm). Note continuous layer boundaries on both sides of the dikes representing no sheared fractures. C, D. Sand dikes representing a hybrid-failure mode of shear and extension (C: 39R-6, 2–15 cm; D: 41R-3, 88–100 cm). Note small amount of displacement along the dikes indicating normal fault sense of shear. Split arrows = fault positions and sense of shear direction.

Figure F26. Sediment-filled veins, Hole U1599C. A, B. Typical occurrence of mud-filled vein structure (A: 13R-3, 33–47 cm; B: 13R-3, 51–65 cm).

Figure F27. Age-depth plot, Holes U1599A–U1599C. Integrated biochronology and magnetostratigraphy are shown. CN = calcareous nannofossil. PF = planktonic foraminifer. Hiatuses are indicated for intervals that correspond to periods of probable sediment remobilization. Biohorizons correspond to those given in Tables T5 and T6.

Figure F28. Calcareous nannofossils, Holes U1599B (1–2), U1599A (3), and U1599C (4–12). 1. *Pseudoemiliania lacunosa* (Kamptner) Gartner (11H-CC, 23–25 cm). 2. *Reticulofenestra asanoi* Sato and Takayama (39F-CC, 18–21 cm). 3. *Gephyrocapsa* sp. 3 (19F-CC, 19–21 cm). 4, 5. 10R-CC, 0–5 cm: (4) *Gephyrocapsa* spp., large form (>5.5 µm); (5) *Gephyrocapsa oceanica* Kamptner. 6. *Calcidiscus macintyrei* (Bukry and Bramlette) (16R-CC, 15–17 cm). 7. *Discoaster brouweri* Tan Sin Hok (20R-CC, 8–11 cm). 8. *Discoaster pentaradiatus* Tan Sin Hok (27R-CC 10–12 cm). 9, 10. 44R-CC, 10–4 cm: (9) *Discoaster deflandrei* Bramlette and Riedel; (10) *Cyclicargolithus floridanus* (Roth and Hay) Bukry. 11. *Sphenolithus belemnos* Bramlette and Wilcoxon (39R-CC 18–21 cm). 12. *Sphenolithus dissimilis* Bukry and Percival (40R-CC, 12–15 cm).

Figure F29. Foraminiferal oceanicity and paleowater depth estimates, Site U1599. Blue colors show relationship between oceanicity index and paleowater

depth. Observers: AW = Adam Woodhouse, OK = Olga Koukousioura. NA = not applicable. (Continued on next page.)

Figure F29 (continued).

Figure F30. Biostratigraphic summary, Site U1599. Interpreted oceanicity: solid line/red points = interpreted oceanicity of Hayward et al. (1999), dashed line = extrapolation through barren/unreliable sample data. Interpreted paleowater depths: light blue points/shading = shallower paleowater depth interpretation, dark blue points/shading = deeper paleowater depth interpretation.

Figure F31. Planktonic foraminifera. A. *Neogloboquadrina pachyderma*. B. *Globoturborotalita woodi*. C. *Neogloboquadrina incompta*. D. *Globoconella inflata*. E. *Orbulina universa*. F. *Turborotalita quinqueloba*. G. *Globigerina falconensis*. H. *Globigerinoides obliquus*. I. *Globigerinella calida*. J. *Neogloboquadrina atlantica* (sinistral). K. *Globigerinoides obliquus*. L. *Neogloboquadrina atlantica* (dextral). (A, C, E–G, I: 398-U1599A-5H-CC, 36–41 cm; B, H: 398-U1599C-22R-CC, 0–3 cm; D: 24R-CC, 9–14 cm; J–L: 31R-CC, 20–22 cm.)

Figure F32. Archive-half section magnetic data, Hole U1599A. Red dashed lines = GAD inclinations expected at this site.

Figure F33. Archive-half section magnetic data, Hole U1599B. Red dashed lines = GAD inclinations expected at this site.

Figure F34. Archive-half section magnetic data, Hole U1599C. Red dashed lines = GAD inclinations expected at this site.

Figure F35. Archive-half section magnetic inclinations, Site U1599. Most of the interval correlates to the Brunhes Chron. Red dashed lines = GAD inclinations expected at this site.

Figure F36. Archive-half section magnetic inclinations for 200–300 mbsf, Site U1599. Red dashed lines = GAD inclinations expected at this site. Dark blue/white = normal/reversed polarity magnetozones, gray shading = no available paleomagnetic data. GPTS = geomagnetic polarity timescale.

Figure F37. Composite archive-half section magnetic inclinations for 300–700 mbsf, Site U1599. Red dashed lines = GAD inclinations expected at this site.

Figure F38. Physical properties, Site U1599. Dots = whole-round measurements, open symbols = discrete measurements. MS values >1500 × 10^{-5} SI are not shown. *P*-wave velocities >3.0 km/s are not plotted and are tabulated in Table T11. cps = counts per second.

Figure F39. Whole-round measurements of bulk density and MS (Section 398-U1599B-27F-2). Image (right) shows archive-half section after subsequent splitting and drying. Bulk density: shading = interval of significant mass redistribution between initial measurement and subsequent rescans, arrow = smaller interval where mass redistribution only occurred between Rescans 1 and 2.

Figure F40. Discrete physical properties measurements, Site U1599. *P*-wave velocity values >3.0 km/s are not plotted and are tabulated in Table T11. Dashed line = AVS upper measurement limit, solid lines = PP measurement limits.

Figure F41. ICP-AES analyses of selected volcaniclastic units used to discriminate between potential volcanic sources, Hole U1599A. 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.

Figure F42. IW salinity, alkalinity, and pH, Site U1599. Lithostratigraphic Units I–III are described in Lithostratigraphy.

Figure F43. IC and ICP-AES concentrations of Br, Cl, B, Na, K, Mg, Ca, and SO_4^{2-} in IW samples, Site U1599. Lithostratigraphic Units I–III are described in Lithostratigraphy.

Figure F44. ICP-AES concentrations of Li, Sr, Mn, Ba, and Si in IW samples, Site U1599. Lithostratigraphic Units I–III are described in Lithostratigraphy.

Figure F45. TOC and carbonate, Site U1599. Lithostratigraphic Units I–III are described in Lithostratigraphy. Sapropel units follow Kidd et al. (1978).