Figure F1. Location map of Site U1467.

Figure F2. Seismic section, Site U1467. Blue horizon marks the boundary between predrift and drift sequences. CDP = common depth point.

Figure F3. Lithostratigraphic summary, Site U1467. Dominating color within each unit is indicated on the right.

Figure F4. Sieved sample (>63 µm) showing preservation of components, Site U1467. A. Planktonic foraminifers, echinoid spines, and pteropods with excellent preservation in Unit I (359-U1467A-1H-1). B. Planktonic foraminifers and cemented particles with poor preservation in Unit III (359-U1467B-26H-5).

Figure F5. Celestine (153–413 mbsf). A. First occurrence of celestine nodule/layer (359-U1467A-23H-2, 52–60 cm). Red square = area in B. B. Celestine in plane-polarized light (PPL) is seen as clear crystals (359-U1467B-23H-2, 57 cm). Red square = area in C. C. Characteristically blue interference color of celestine in cross-polarized light (XPL) within nannofossil-rich wackestone.

Figure F6. Fine fraction (359-U1467B-36H-7, 20–24 cm; 328.1 mbsf). Planktonic foraminiferal fine-grained wackestone with (1) planktonic foraminifer, (2) abundant silt-sized bioclasts, (3) micritic matrix, (4) organic matter, and (5) rare apatite.

Figure F7. Main color changes in cores, Site U1467. Color changes can be observed within one section (359-U1467B-46F-3; Unit IV) from (A) highly bioturbated dark gray wackestone at the top of the section gradually changing to (B) dark gray to very dark grayish brown wackestone with celestine concretions within the burrows and then to (C) highly bioturbated light grayish brown to white wackestone.

Figure F8. Range of thickness, average thickness, and percentage of core occupied by lighter intervals in Units V and VI, Holes U1467B and U1467C. Lighter intervals decrease downhole.

Figure F9. Lighter and darker intervals and associated color reflectance and NGR data (359-U1467B-66X; Unit V). Individual color cycles are indicated. Reflectance data show characteristic inverse relationship between L* and NGR, with lower NGR counts/s in lighter intervals, top cycles.

Figure F10. Light reflectance and NGR data across the Unit V/VI boundary, Hole U1467C. Note the inverse relationship between L* and NGR and the decrease in NGR counts/s upcore. Individual color cycles are indicated.

Figure F11. Planktonic foraminifer-rich wackestone with abundant planktonic foraminifers and rare benthic foraminifers in light interval (359-U1467B-70X-1, 17–20 cm; 539.8 mbsf) and dark interval (70X-1, 101–104 cm; 540.6 mbsf), Unit V. A, C. PPL. Red squares = area of B and D, respectively. B, D. XPL. 1 = planktonic foraminifer, 2 = silt-sized bioclast, 3 = planktonic foraminifer, 4 = inner pore space of planktonic foraminifer chamber partially infilled by dogtooth calcite cements, 5 = flattened foraminifer (indicating minor compaction), 6 = cements absent from pore space, 7 = clay- to silt-sized organic matter remains.

Figure F12. Biostratigraphic and paleoenvironmental summary, Site U1467. Calcareous nannofossil and planktonic foraminifer biozonation is shown with paleoenvironmental information provided by benthic foraminifers and ostracods.

Figure F13. Age-depth profile, Site U1467. Details of each event are given in Table **T2**. The age constraint for the base of the recovered sediments aged <13.3–13.4 Ma is based on several reliable events that must occur below the base of Hole U1647C (see text). The green dotted correlation line and sedimentation rates are based on biostratigraphic data alone, and magnetostratigraphic data were added to show good coherence between these data sources. Plotted paleomagnetic events are chron tops (e.g., the event labeled C2Ar is the top of Chron C2Ar).

Figure F14. Enlarged age-depth profile for the Pliocene and Pleistocene, Site U1467. There are discrepancies between the planktonic foraminiferal and nannofossil data. Shore-based magnetostratigraphy from Hole U1467D should help resolve these uncertainties.

Figure F15. Small *Reticulofenestra* event, Hole U1467B. Top: base of event (68X-CC) and just below it (69X-CC). R = *Reticulofenestra* specimens. Bottom: rectangles = sampled intervals of dark, possibly clay-rich sediment containing very well preserved nannofossils (69X).

Figure F16. Plate of selected planktonic foraminifers, Site U1467. 1, 2. *Globigerinoides fistulosus*. 3. *Globorotalia tumida*. 4, 5. *Globorotalia margaritae*. 6. *Globorotalia limbata*. 7. *Globorotalia lenguaensis*. 8, 9. *Globigerinoides obliquus*. 10, 11. *Dentoglobigerina altispira*. 12. *Globoquadrina dehiscens*. 13, 14. *Fohsella fohsi*. 15. *Globigerina rubescens* pink (two specimens). Scale bars = 250 µm.

Figure F17. Plate of Pleistocene large agglutinated benthic foraminifers (359-U1467B-1H-CC). 1–6. *Reophax* sp. 7–12. Unidentified agglutinates. Scale bars = 100 µm.

Figure F18. Plate of representative benthic foraminifers. Upper bathyal benthic foraminifer *Siphonina pozonensis* is abundant from the middle to late Miocene: 1, 2. *S. pozonensis* (359-U1467B-53F-CC). 3, 4. *S. pozonensis* (359-U1467C-28X-CC). *Planulina* sp. is common in late Miocene intervals: 5. *Planulina* sp. (359-U1467B-3H-CC). Fish teeth occur throughout Site U1467: 6. Fish tooth, unidentified species (359-U1467C-24X-CC). The most common types of uvigerinids abundant throughout Site U1467: 7. *Uvigerina hispida* (359-U1467B-3H-CC). 8. *Uvigerina proboscidea* (4H-CC). 9. *Uvigerina mexicana* (3H-CC). Scale bars = 100 µm.

Figure F19. Plate of middle to late Miocene bolivinid benthic foraminifers. 1, 2. Smooth flat bolivinids (359-U1467B-77X-CC). 3, 4. Smooth flat bolivinids (359-U1467C-24X-CC). 5–7. Smooth flat bolivinids (26X-CC). 8–10. Crenulate bolivinids (26X-CC). 11–13. Crenulate bolivinids (27X-CC). 14. Smooth flat bolivinid (27X-CC). 15, 16. Smooth flat bolivinid (28X-CC). Scale bars = 100 µm.

Figure F20. Plate of radiolarians from mudline sample, Hole U1467B. 1. *Buccinosphaera invaginata* Haeckel. 2. *Collosphaera tuberosa* Haeckel. 3. *Didymocyrtis tetrathalamus* (Haeckel). 4. *Tetrapyle octacantha* Müller group. 5. *Larcopyle butschlii* Dreyer. 6. *Tholospira cervicornis* Haeckel. 7, 8. *Zygocircus productus* (Hertwig) group.

Figure F21. IW Cl^-, Na^+, and K^+ concentrations, Holes U1467A–U1467C.

Figure F22. IW alkalinity, hydrogen (pH), and SO_4^{2-} concentrations, Holes U1467A–U1467C.

Figure F23. IW Ca^{2+}, Mg^{2+}, Sr^{2+}, and Li^+ concentrations, Holes U1467A–U1467C.

Figure F24. IW Sr^{2+}/Ca^{2+}, Mg^{2+}/Ca^{2+}, Ca^{2+}/Cl^-, and Mg^{2+}/Cl^-, Holes U1467A–U1467C.

Figure F25. IW Fe, B, Ba, and Si concentrations, Holes U1467A–U1467C.

Figure F26. Carbonate and organic carbon contents, Holes U1467A–U1467C.

Figure F27. Relative concentrations of aragonite, HMC, LMC, dolomite, and quartz measured using XRD, Site U1467.

Figure F28. Sr/Ca, Mg/Ca, Mn/Ca, and Fe/Ca, ratios of sediments, Site U1467.

Figure F29. Methane and ethane concentrations in headspace, Site U1467.

Figure F30. Ion activity product (IAP) of $SrSO_4$, Site U1467. Activity coefficients from Baker and Bloomer (1988). Vertical line = equilibrium constant of $10^{-6.5}$ (Reardon and Armstrong, 1987). Site U1466 pore waters also attain saturation with respect to celestine, but the mineral was not detected at this site.

Figure F31. NRM intensity, declination, and inclination, Hole U1467A. The randomly dispersed directions did not allow interpretation. Intensity changes by about five orders of magnitude within each core with maximum intensities at the top of each core.

Figure F32. NRM intensity, declination, and inclination, Cores 359-U1467B-1H through 37H. Paleomagnetic directions are randomly oriented, and intensity has the same characteristic pattern observed in Hole U1467A to about 180 mbsf. Below this depth, paleomagnetic directions have consistent declinations and inclinations within the same core and the peaks of highest intensity are reduced. This part of Hole U1467B provided some useful magnetic stratigraphy.

Figure F33. NRM intensity, declination, and inclination, Hole U1467C. Gray lines = data with unreasonably high intensity, which were removed before the interpretation. Circles = Fisher (1953) mean direction of each section. High-intensity peaks are still present despite cleaning the drill pipe, but averaged paleomagnetic directions are not extremely scattered and give interpretable results.

Figure F34. NRM intensity, declination, and inclination, Hole U1467D. Unoriented cores and constantly positive inclination did not allow interpretation of these data.

Figure F35. Representative vector endpoint diagrams (Zijderveld, 1967) of magnetization directions, Site U1467. Sediment samples went through stepwise AF demagnetization, and discrete samples were measured with the AGICO spinner magnetometer (JR-6A). Straight blue lines = ChRM component derived by principal component analysis (Kirschvink, 1980).

Figure F36. NRM intensity, declination, and inclination with magnetostratigraphy, Holes U1467B and U1467C. Polarity: black = normal, white = reversed, gray = uncertain.

Figure F37. Inclination and magnetostratigraphy, Cores 359-U1467B-24X through 37X. Solid black line = five-point smoothing, black dashed line and black squares = mean inclination of each section. Polarity: dark gray = black = normal, white = reversed, possible normal chrons, light gray = possible reversal chrons.

Figure F38. NGR, Site U1467.

Figure F39. Bulk density from GRA and MAD, grain and dry density, and porosity, Site U1467.

Figure F40. *P*-wave velocity from the WRMSL, split cores, and discrete samples, Site U1467.

Figure F41. Color reflectance, Site U1467.

Figure F42. Magnetic susceptibility, Site U1467.

Figure F43. Thermal conductivity and shear strength, Site U1467.

Figure F44. Logging operations, Site U1467.

Figure F45. Triple combo logs, Hole U1467C. Note that downhole logs are on the logging depth scale, whereas natural gamma ray (NGR), density and porosity (MAD), and magnetic susceptibility (MSL = gray dots; MSP = blue dots) core data from Holes U1467B and U1467C and core recovery are on the core depth scale. HRLA: R3 = medium resistivity, R5 = deepest resistivity, RT = true resistivity, modeled from all depths of investigation.

Figure F46. Triple combo logs, Hole U1467E. Note that downhole logs are on the logging depth scale, whereas the natural gamma ray (NGR), density and porosity (MAD), and magnetic susceptibility (MSL = gray dots; MSP = blue dots) core data from Holes U1467B and U1467C and core recovery are on the core depth scale. HRLA: R3 = medium resistivity, R5 = deepest resistivity, RT = true resistivity, modeled from all depths of investigation.

Figure F47. Downhole logs recorded by Pass 2 of the FMS-sonic tool string, Hole U1467E. C1 and C2 = orthogonal calipers. Higher waveform coherence, in orange-red colors in the velocity tracks, is a measure of the reliability of the slowness/time coherence algorithm used to derive V_P and V_S from monopole and upper dipole sonic waveforms, respectively. V_P trends are similar to resistivity (true resistivity log from triple combo tool string).

Figure F48. *P*-wave velocity from the sonic velocity log in Hole U1467E and cores (whole rounds, split cores, and discrete samples) from Holes U1467B and U1467C. PWC = velocity measured on split cores and discrete samples.

Figure F49. Downhole logs, Holes U1467C and U1467E. Differences in log values and character are mainly due to the difference in borehole diameter. This data set provides important quality control information for log data in wide boreholes.

Figure F50. NGR logs, Hole U1467E. HSGR = standard (total) gamma ray, HCGR = computed (U-free) gamma ray.

Figure F51. FMS images, Hole U1467E.

Figure F52. FMS images illustrating high-resistivity layering in logging Unit 3, Hole U1467E.

Figure F53. Time-depth curves and *P*-wave velocity, Site U1467. Left: VSP check shot stations and integrated sonic velocity log are from Hole U1467E; seismic horizon depths are based on the expedition seismic velocity model. Integrated sonic log curve from Hole U1467E assumes *P*-wave velocity of 1615 m/s from 0 to 100 mbsf, based on average velocity measurements on discrete core samples over that depth interval, and the deepest velocity measured by the sonic log at 660 mbsf is used to extend the integration to the bottom of the borehole at 714 mbsf. Right: Interval velocities derived from traveltimes between the 13 VSP stations, displayed overlying sonic log velocities from Hole U1467E.

Figure F54. Spliced L*, NGR, and GRA records, Site U1467. A 21 point Gaussian filter (solid line) was used to smooth the data.

Figure F55. Spliced L* record, Site U1467. Stacked benthic foraminifer ($\delta^{18}O$) from Lisiecki and Raymo (2005). Sedimentation rates were calculated by correlating the L* data to $\delta^{18}O$ stack minima.

Figure F56. Spliced NGR record, Site U1467. Eccentricity from Laskar et al. (2004). Sedimentation rates were calculated by correlating NGR minima to eccentricity minima.

Figure F57. Seismic section of drift sequences, Site U1467. DS1 in dark blue marks the base of the current-controlled sedimentation in the Inner Sea.

Figure F58. Correlation of seismic, log, and core data, Site U1467. Seismic Line 5 (SO236) is shown with the base of drift sequences and the site's penetration depth. HSGR = standard total natural gamma ray, RT = resistivity, RHOM = bulk density, V_P = sonic log. Interval velocity = model for time-depth conversion.

Figure F59. Time-depth conversion, Site U1467.