Figure F1. Mahanadi basin with locations of Sites U1445 and U1446 (proposed Sites BB-5 and BB7) and the approximate track of the "regional" seismic line of Dangwal et al. (2008) (white). Map was generated using GeoMapApp (**http://www.geomapapp.org**).

Figure F2. Interpreted "regional" seismic section passing through the 85°E Ridge in the Mahanadi deepwater basin to the shelf edge in the north, modified from Dangwal et al. (2008). The approximate track of this line is indicated in Figure **F1**. Sites U1445 and U1446 (proposed Sites BB-5 and BB-7) are projected on the line. TWT = two-way traveltime.

Figure F3. Lithostratigraphic summary, Site U1445. All unit divisions are plotted relative to Hole U1445A. Details of each core are available in the visual core description logs.

Figure F4. Lithostratigraphic summary with selected physical property and geochemical data from Holes U1445A–U1445C. See Figure **F3** for graphic lithology key. MS = magnetic susceptibility, NGR = natural gamma radiation.

Figure F5. Smear slide data, Holes U1445A and U1445C. See Figure **F3** for graphic lithology key.

Figure F6. Line-scan images of main lithologies, Site U1445. A. Clay with nannofossils, Subunit Ia. B. Clay with biosilica, Subunit Ib. C. Diatom-rich clay, Subunit Ib. D. Biosilica-rich clay, Subunit Ib.

Figure F7. Photomicrographs of the main lithologic types, Site U1445. A, B. Clay with nannofossils, Subunit Ia. C, D. Clay with biosilica, Subunit Ia. E, F. Diatom-rich clay with glauconite, Subunit Ib. PPL = plane-polarized light, XPL = cross-polarized light.

Figure F8. Line-scan images, Site U1445. A, B. Volcanic ash associated with the Toba eruption. C. Authigenic pyrite nodule in nannofossil clay. D. Nannofossil ooze clasts in biosilica-rich clay with glauconite. E. Lineation indicating possible fault fracture. F. Minor fault with displacement of turbidite sand. G. Severe core disturbance (vertical cracks) because of gas expansion. H. Severe mousselike core disturbance because of hydrate dissociation.

Figure F9. Photomicrographs of minor sedimentary components, Site U1445. A, B. Volcanic ash associated with the Toba eruption. C, D. Clayey authigenic carbonate–rich ooze. E, F. Foraminifer-rich sand with quartz. G, H. Quartz-rich well-sorted silt with feldspar.

Figure F10. Representative turbidite compositions, Site U1445. A. Quartz-rich turbidite. B. Coarse-grained turbidite with foraminifers. C. Turbidite with shell fragments. D. Turbidite with gray and green clasts.

Figure F11. Turbidite abundance and thicknesses, Hole U1445C. Qz = quartz.

Figure F12. Scanning electron microscope image of a turbidite sample showing (A) a pyrite framboid and (B) octahedral crystal aggregates of authigenic pyrite (353-U1445A-68X-2, 49–50 cm).

Figure F13. XRD diffractograms showing the difference in calcite content between the main dark gray lithology and the more nannofossil-rich browner minor lithology (353-U1445A-60X-3, 92–108 cm).

Figure F14. XRD diffractograms showing clay mineralogy from selected samples, Hole U1445A.

Figure F15. Summary of biostratigraphic events identified in Hole U1445A. T = top (last occurrence), B = bottom (first occurrence), LO = last occurrence, FO = first occurrence. For biozone schemes used, see **Biostratigraphy** in the Expedition 353 methods chapter (Clemens et al., 2016).

Figure F16. Core image of a horizon containing rip-up clasts of nannofossil-rich sediment of different ages, Hole U1445C. Matrix samples 5H-2A, 40 cm; 5H-2A, 70 cm; 5H-2A, 116 cm; 5H-2A, 140 cm; 4H-CC; and 5H-CC contain nannofossils of the same age/zone as sediments above and below the horizons containing rip-up clasts. * = age was determined for a clast of the same color in the corresponding horizon in Hole U1445A.

Figure F17. Biostratigraphic- and paleomagnetic reversal-based age-depth plot, Hole U1445A. Vertical error bars show the depth range of the identified biostratigraphic events (e.g., between two core catchers or two core sections). Some Middle and early Pleistocene foraminifer events have larger error bars because it cannot be ascertained whether uppermost specimens found are reworked or whether these species have a longer stratigraphic range in the Indian Ocean compared to other ocean basins. Horizontal error bars show the age range for certain bioevents. Color shading along the *x*-axis shows the late Miocene, the early and late Pliocene, and the early, Middle, and Late Pleistocene.

Figure F18. Methane and ethane concentrations, methane/ethane ratio, and hydrogen sulfide gas concentrations, Hole U1445A.

Figure F19. Headspace gas methane concentration, Hole U1445B.

Figure F20. Calcium carbonate, TOC, and TN contents and TOC/TN ratio in lithostratigraphic Subunits Ia and Ib, Hole U1445A.

Figure F21. Interstitial water alkalinity, PO_4^{3-}, NH_4^+, SO_4^{2-}, Mn, and Fe, Hole U1445B. Error bars represent two standard deviations of repeated measurements of IAPSO seawater or a pore water sample (see **Geochemistry** and Tables **T5** and **T6**, all in the Expedition 353 methods chapter [Clemens et al., 2016]).

Figure F22. Interstitial water alkalinity, PO_4^{3-}, NH_4^+, SO_4^{2-}, Mn, Fe, Sr, Li, B, Ca, Mg, and Ba, Site U1445. Error bars represent two standard deviations of repeated measurements of IAPSO seawater or a pore water sample (see **Geochemistry** and Tables **T5** and **T6**, all in the Expedition 353 methods chapter [Clemens et al., 2016]).

Figure F23. Chloride concentrations of hydrate associated interstitial water (IW) compared to routinely sampled interstitial water, Site U1445.

Figure F24. Downhole variations in declination, inclination, and intensity, Hole U1445A. Gray and black symbols represent data before and after 10 mT AF demagnetization, respectively. Declinations between 16 and 225 m CSF-A were corrected to geographic (true) declination.

Figure F25. Downhole variations in declination, inclination, and intensity, Hole U1445C. Gray and black symbols represent data before and after 10 mT AF demagnetization, respectively. Declinations between 4.4 and 217.67 m CSF-A were corrected to geographic (true) declination. The inferred polarity pattern for Hole U1445C is also shown (black = normal polarity, white = reversed, gray = uncertain boundary, hatched = ambiguous zone of polarity).

Figure F26. Variations in a selection of bulk magnetic parameters and ratios in the upper 50 m CSF-A, Hole U1445A. ARM = anhysteretic remanent magnetization, IRM = isothermal remanent magnetization, HIRM = hard isothermal remanent magnetization.

Figure F27. Representative stepwise AF demagnetization results displayed by orthogonal vector plots. Red symbols = points used in PCA, blue lines = calculated ChRM direction. A. 0.87 m CSF-A. B. 297.50 m CSF-A.

Figure F28. Downhole variations in magnetic parameters used to define magnetostratigraphy, Hole U1445A. From left to right: true declination from the archive halves, discrete sample ChRM declinations (data between 16 and 225 m CSF-A were corrected to true declination), discrete sample ChRM inclinations, and the inferred polarity pattern (black = normal polarity, white

= reversed, gray = polarity not determined, hatched = discrete sample data are missing to define polarity boundary).

Figure F29. Stepwise AF demagnetization results, 338.4 m CSF-A.

Figure F30. Downhole comparison of NRM intensity, Site U1445.

Figure F31. Variations in a selection of bulk magnetic parameters and ratios for the entirety of Hole U1445A. Lithostratigraphic boundaries (see **Lithostratigraphy**) are also shown.

Figure F32. Physical properties showing downhole variability in magnetic susceptibility from WRMSL, STMSL, and point SHMSL; density from WRMSL, STMSL, and MAD (red points); porosity; and NGR, Hole U1445A.

Figure F33. Whole-round physical properties showing downhole variability in magnetic susceptibility from WRMSL, STMSL, and point SHMSL; density from WRMSL and STMSL; and NGR, Hole U1445C.

Figure F34. Whole-round physical properties showing downhole variability in magnetic susceptibility from WRMSL, STMSL, and point SHMSL; density from WRMSL and STMSL; and NGR, Hole U1445B.

Figure F35. L*, a*, and b* data, Hole U1445A.

Figure F36. L*, a*, and b* data, Hole U1445B.

Figure F37. L*, a*, and b* data, Hole U1445C.

Figure F38. SHIL RGB color data, Hole U1445A.

Figure F39. SHIL RGB color data, Hole U1445B.

Figure F40. SHIL RGB color data, Hole U1445C.

Figure F41. Downhole temperature data, Holes U1445A and U1445C.

Figure F42. Examples of IR cold spot anomalies, Hole U1445C. A. Anomaly is ~4.7°C cooler than surrounding sediments in section (25X-4, 7 cm). B. Anomaly is ~5.0°C cooler than surrounding sediments in section (29X-3, 9 cm). C. Anomaly is ~6.0°C cooler than surrounding sediments in section (34X-1, 4 cm).

Figure F43. (A) Caliper, (B) total NGR, and (C–D) spectral gamma curves for potassium, uranium, and thorium, Site U1445. The log total NGR is scaled for comparison with core-derived NGR measurements.

Figure F44. (A) Caliper, (B) density, (C) porosity, and (D) *P*-wave velocity, Site U1445. The density and porosity data are displayed with core-derived data for comparison. PWL = *P*-wave logger.

Figure F45. Triple combo tool summary logs, Hole U1445A. LCAL = caliper, HSGR = total spectral gamma ray, RHOM = bulk density.

Figure F46. FMS summary log images (static and dynamic normalization), Hole U1445A. High-resolution version of this figure is available in DOWNHOLE in **Supplementary material**.

Figure F47. Core alignment exemplified using (A) RGB blue (used in lieu of green due to availability of outlier-cleaned data), (B) NGR, and (C) MS profiles, Holes U1445A–U1445C. Spliced profile is also shown. Black vertical lines indicate splice tie points. Original KaleidaGraph files are available in STRATCOR in **Supplementary material**.