Figure F1. A. Bathymetry around Site U1517 with in-line and cross-line tracks from the 3-D seismic cube (white rectangle). B. IL1778 seismic section from the 3-D cube crossing Site U1517 with interpreted key horizons.

Figure F2. Seismic in-lines and cross-lines (X-lines) across Site U1517 with depth scale and key horizons. Depth scale assumes a subseafloor velocity of 1700 m/s.

Figure F3. Composite lithology log based on visual core descriptions showing lithostratigraphic units and 1 cm resolution SHMSL magnetic susceptibility, Hole U1517C. cps = counts per second.

Figure F4. Correlation between RGB, core photograph (372-U1517C-1H-4), and point magnetic susceptibility (MS) data. Gray shading indicates position of sandy intervals and their RGB and magnetic susceptibility response.

Figure F5. Grain size distribution based on visual estimates of a representative smear slide from each lithostratigraphic unit, Hole U1517C. Unit II: coarse silt from alternating sand and mud layers (3F-4, 28 cm). Unit III: silt from thin alternating silt and clay layers (13F-4, 30 cm). Unit IV: clayey silt (15H-3, 8 cm). Unit V: very fine sand from thin bedded sand, silt, and clay (36F-1, 28 cm).

Figure F6. Visual estimates of average grain size for representative sediment from Units II–V on a standard ternary plot, Hole U1517C.

Figure F7. Drilling-related disturbance, Hole U1517C. A. Subhorizontal parallel beds showing very little obvious drilling-related disturbance. B. Bed drag deformation (concave-downward form) occurring above and below a 5 cm thick sandy bed that has not deformed. C. Void left after core was pushed back together following gas expansion. D. Top section mixing of lithologies and disturbance of sediment structures. Below 63 cm, sedimentary structures are preserved but retain bed drag type deformation. E. Fluidization of sand that may be related to drilling with clear bed drag below. F, G. Midcore disturbance in soft, fine-grained sediments.

Figure F8. Lithostratigraphic Unit I, Hole U1517C. A. Very soft mud (1H-1, 64–82 cm). B. Lower unit boundary defined by sandy beds (1H-2, 111–130 cm).

Figure F9. Representative photomicrographs, Unit II (372-U1517C-3F-4, 28 cm; 19.6 mbsf; A, C: plane-polarized light [PPL]; B, D: cross-polarized light [XPL]). Q = single and polycrystalline detrital quartz (weak birefringence), L = lithic fragments, C = nonskeletal carbonate grains (high birefringence). Foraminifer test (red arrow), green glauconite (G) grains, and glass shards (yellow circles) are minor components. Note speckled birefringence of clay-sized material in B. Note the different texture between angular carbonate grains and subrounded quartz grains in C. Brownish fragments in PPL with moderate birefringence are interpreted to be sedimentary lithic fragments (mudstone).

Figure F10. Lithostratigraphic Unit II, Hole U1517C. A. Very thin to thin graded beds with highly irregular basal contacts (2H-2, 24–43 cm). B. Thin graded beds with sharp irregular to planar contacts (5F-2, 20–38 cm). Note that concave-downward structure is drilling-induced deformation. C. Thin to medium graded beds with highly irregular basal contacts (6F-3, 15–34 cm).

Figure F11. Amalgamated sand beds with sharp upper and lower contact (372-U1517C-7F-2). Turbidites are characterized by grading into overlying sediment, and sharp upper contact indicates postemplacement modification.

Figure F12. Lithostratigraphic Unit III, Hole U1517C. A. Thin clayey silt laminations (11F-3, 1–18 cm). B. Thicker clayey silt laminations (13F-3, 11–27 cm). Note the overall darker color of the beds compared with Units I and II (see Figures F8, F10). C. Convoluted beds indicating debrite deposit (12F-4, 39–55 cm).

Figure F13. Representative photomicrographs, Unit III (372-U1517C-13F-4, 30 cm; 65.8 mbsf; A, C: PPL; B, D: XPL). A, B. Sample is dominated by clay-sized brownish chloritic clumps or authigenic glauconite. Spherical to irregular opaque material is interpreted to be authigenic micronodules. Silt-sized fraction comprises detrital quartz and volcanic fragment grains. Sample has minor detrital carbonate input. Note the opaqueness of the micronodules in B. C, D. Spherical micronodule and brown organic matter surrounded by chlorite or authigenic glauconite clumps.

Figure F14. Lithostratigraphic Unit IV, Hole U1517C. Greenish gray, massive clayey silt. A. Structureless interval with millimeter-scale light-colored blebs at 95 and 99 cm (14F-3, 89–106 cm). Shell fragments are present between 108 and 110 cm. B. Structureless interval with a ~3 cm sandy bed between 72 and 75 cm (17H-2, 66–82 cm).

Figure F15. Representative photomicrographs of calcareous clay, Unit IV (372-U1517C-15H-3, 8 cm; 73.5 mbsf; A, C: PPL; B, D: XPL). A, B. Sponge spicules (yellow arrow). Elongated euhedral crystal (red arrow) is phillipsite, a type of zeolite associated with volcanic glass shards (yellow circles). G = glauconite. C, D. Large sponge spicule with distinct axial tube and knobbed end (tylostyle) clearly visible. XPL reveals a large amount of coccoliths (white circles).

Figure F16. Lithostratigraphic Unit V, Hole U1517C. A. Mostly massive, greenish gray clayey silt intervals (29F-3, 11–30 cm). B. Sandy based graded bed (31F-3, 14–32 cm). Gas hydrates were recovered from this core section. C. Volcanic tephra bed that mixed with overlying sediment (35F-4, 48–66 cm).

Figure F17. Representative photomicrographs, Unit V (372-U1517C-36F-1, 28 cm; 184 mbsf; A, C: PPL; B, D: XPL). A, B. Well-rounded grains of calcareous debris (C) and altered volcanic fragments (V). Note the high birefringence color of calcareous grains. C, D. Interpreted calcareous debris. Note incipient formation of a coating with different optical orientation around grains, probably amorphous silica.

Figure F18. Simplified lithostratigraphic column with bulk powder XRD results, Hole U1517C. Values are normalized such that total clay minerals (smectite + illite + chlorite + kaolinite) + quartz + feldspar (plagioclase + K-feldspar) + calcite = 100%. See Table T4 for data.

Figure F19. Representative X-ray diffractograms of bulk sediments, Hole U1517C. Note the changes in scale for peak intensity. Diagnostic peaks are labeled: Cl = total clay minerals, Q = quartz, F = feldspar, Cc = calcite.

Figure F20. Magnetic inclination, declination, intensity, and point magnetic susceptibility (MS), Site U1517. See text for details. See Figure F3 for lithology key. GAD = geocentric axial dipole.

Figure F21. Vector component (Zijderveld) and NRM intensity vs. demagnetization level from superconducting rock magnetometer measurements on archive halves displaying typical demagnetization behavior, Hole U1517C.

Figure F22. A. Downcore chloride profiles (titration and IC), Site U1517. Discrete excursions to low chloride values are indicative of gas hydrate dissociation during core retrieval and are used to estimate (B) gas hydrate saturation (S_h) values.

Figure F23. Sulfate and methane profiles, upper 100 m of Hole U1517C. SMT (dashed red line) illustrates horizon where sulfate is consumed and methane begins to increase with depth.

Figure F24. Alkalinity, ammonium, bromide, iron, manganese, and silica concentration profiles, Hole U1517C. Dashed lines = lithostratigraphic unit boundaries, blue arrows = average seawater values.