Figure F1. Bathymetric map showing Holes U1552A–U1552C, which are situated along Seismic Line SO-112. Holes U1552A and U1552B were drilled just 5 m apart from each other, so their locations are not distinguishable at the given scale. Seafloor cold-seep communities are known to be present ~200 m north and ~800 m northwest of Hole U1552A near the closed contour of 1844 m water depth. Contour lines = 1 m.

Figure F2. Bathymetry of Guaymas Basin with Baja California in the southwest and the Sonora margin in the northeast, showing all DSDP Leg 64 and IODP Expedition 385 sites drilled in the area. Seismic = seismic transects conducted prior to Expedition 385. Inset: tectonic setting of the Gulf of California; green shading = Guaymas Basin; blue box = main figure area. Contour lines = 200 m. DSDP = Deep Sea Drilling Project.

Figure F3. Bottom: Seismic Line SO-112 with an interpreted sill intrusion indicated at ~3.2 s two-way traveltime (TWT). Moderately blanked zones extend upward from the edges of this sill and have a substantial expression in the upper 0.15 s TWT (~110 m) of sediment. Blue box = expanded view shown in top panel. Top: enlarged view of the southeastern pipe structure with hole locations indicated. Near the pipe, between the locations of Holes U1552A–U1552C, strata in the upper 0.015 s TWT terminate against a structure that is interpreted to be a mostly buried mound. The black dashed line at ~2.54 s TWT southeast of the pipe indicates the interpreted base of a gas hydrate stability zone inferred from change in reflectivity crosscutting strata. This horizon is not apparent on the northwest side of the pipe. CDP = common depth point.

Figure F4. Lithologic summary, Site U1552. Data on right are from Hole U1552A. Two distinct terrigenous beds are indicated (1 and 2), which can be correlated between Holes U1552A and U1552C. NGR = natural gamma radiation, cps = counts per second, MS = magnetic susceptibility, WRMSL = Whole-Round Multisensor Logger, b* = color reflectance.

Figure F5. Examples of sand layers in Unit I. A. White arrows highlight porosity created by gas expansion after the decomposition of gas hydrate. A thin foraminifer-rich sand (Fo S) is lighter in color (385-U1552A-9H-6, 42–55 cm). B. Two sand layers in Section 385-U1552A-10H-4. The fine sand (FS) at 38 cm overlies diatom ooze (DO) and shows two sharp contacts (base and top); the sand (S) at 22 cm is coarser and normally graded with a scoured basal contact (385-U1552A-10H-4A, 13–42 cm). DC = diatom clay. C. Normally graded sand with a scoured and sharp basal contact (385-U1552C-11H-4, 2–15 cm). This sand is the base of Depositional Unit T2 (see Figure F4). Note that the vertical section depth scale unit is centimeters.

Figure F6. Depositional units (385-U1552C-3H). Red arrows and lines highlight the boundaries of Depositional Unit T1 (Figure F4). Starting from (A) the base of the depositional unit, the lithologic succession in the unit consists, from (A) the base to (B) the top, of graded sand (S), silt, clayey silt (CS), silty clay (SC), and diatom ooze (DO). Note that the regular linear pattern on the core image (3–4 cm spacing) is an artifact of cleaning the core surface by scraping a glass slide across it.

Figure F7. Two views of the disrupted contact between a clayey silt (CS) layer in Core 385-U1552C-7H where it cross-cuts horizontally bedded background (host) sediments at a high angle, forming a clastic dike. The host sediments include laminated diatom ooze (LamDC), diatom clay (DC), gray layer (GL), and sand (S). Note that both the lower (7H-6) and upper (7H-5) contacts are at similar high angles. There is a meter of core between these images that is not pictured. Arrows highlight "veins" of sand and silt outlined in fine dashes that also cross-cut the background (host) sediment in what may be another injection feature above the main clastic dike boundary (bold dashed line) in Section 7H-5. Note that the vertical section depth scale unit is centimeters.

Figure F8. Faulting and sediment injection (clastic dike) (Sections 385-U1552C-8H-1 through 8H-4; 61.3–66.4 mbsf). Color is digitally enhanced to highlight compositional differences of stratigraphic layers and contrast across faults. Red lines = two high-angle faults. Part of the clastic dike is visible in the third section image to the right (8H-3, 78–110 cm).

Figure F9. Part of a clastic dike (385-U1552C-7H-5; ~57 mbsf). Left: red dashed line = clastic dike, blue line = fault with 60° dip from 43 cm section depth downhole. Right: same interval showing the clastic dike as an interruption in the bedding. The sedimentary laminations are offset by the fault below the 43 cm scale mark and are offset along the clastic dike above the 43 cm scale mark, indicating that the clastic dike merged with the trace of the fault above this depth in the core.

Figure F10. Age-depth plot, Site U1552. See Table T5 for event details. T = top, B = bottom.

Figure F11. Inclination, declination, magnetic intensity, and magnetic susceptibility, Hole U1552A. Inclination data (A) before and (B) after alternating field (AF) demagnetization at 20 mT. Red squares = characteristic remanent magnetization inclination of discrete samples after principal component analysis. Expected geocentric axial dipole inclination (~46.2°) is indicated by green (reversed polarity) and blue (normal polarity) lines. C. Declination before demagnetization. D. Magnetic intensity (natural remanent magnetization). E. Section Half Multisensor Logger point magnetic susceptibility.

Figure F12. Inclination, declination, magnetic intensity, and magnetic susceptibility, Hole U1552C. Inclination data (A) before and (B) after AF demagnetization at 20 mT. Red squares = characteristic remanent magnetization inclination of discrete samples after principal component analysis. Expected geocentric axial dipole inclination (~46.2°) is indicated by green (reversed polarity) and blue (normal polarity) lines. C. Declination before demagnetization. D. Magnetic intensity (natural remanent magnetization). E. Section Half Multisensor Logger point magnetic susceptibility.

Figure F13. Alternating field (AF) demagnetization and principal component analysis results on discrete samples, Site U1552. A. Zijderveld demagnetization diagrams for selected discrete samples. B. Evolution of magnetization with applied AF for the same samples. C. Equal-area stereographic projection of discrete sample directions in specimen coordinates. NRM = natural remanent magnetization, ChRM = characteristic remanent magnetization.

Figure F14. Anisotropy of magnetic susceptibility, Site U1552.

Figure F15. Interstitial water chemistry, Site U1552. The sulfate–methane transition zone (SMTZ) is illustrated by dashed lines. GH = gas hydrate.

Figure F16. Dissolved C_1–C_6 hydrocarbons concentrations as well as C_1/C_2 and C_1/C_+ values in headspace gas samples, Holes U1552A–U1552C.

Figure F17. C_1–C_6 hydrocarbons concentrations as well as C_1/C_2 and C_1/C_+ values in void gas samples, Holes U1552A–U1552C.

Figure F18. Void space per meter core as percent of length, in Holes U1552A–U1552C.

Figure F19. Concentrations of H_2 and CO dissolved in pore water (headspace samples) and in void gas samples, Holes U1552B and U1552C.

Figure F20. Microbial cell abundance versus depth, Hole U1552B. Images show microscopic field views used to count microbial cells (top = 1H-1; bottom = 6H-1). SYBR Green I–stained cells can be seen in green color fluorescence; non-cell particles are in yellow-orange (Morono et al., 2009).

Figure F21. Physical properties, Holes U1552A and U1552B. A. Recovery plot and lithostratigraphic column. B. Density (GRA = gamma ray attenuation, MAD = moisture and density). C. Magnetic susceptibility (MS) on log scale (WRMSL, MS-point by SHMSL). D. Sonic velocities (*P*-wave values obtained from WRMSL and discrete caliper measurements). E. Natural gamma radiation (NGR) measured by NGRL; cps = counts per second. F. Rheology (AVS = automated vane shear, PEN = pocket penetrometer). G. Porosity (MAD).

Figure F22. Heat flow calculations, Site U1552. A. Formation temperature measurements. APCT-3 = advanced piston corer temperature tool. B. Measured thermal conductivity. C. Heat flow, q [mW/m^2], shown as the slope of the line relating T(z) to cumulative thermal resistance.