Figure F1. Locations of IODP Sites U1612, U1614, U1615, and U1616; Expedition 402 proposed drilling locations; and DSDP Leg 42, ODP Leg 107, and ODP Leg 161 sites. Purple = primary sites, pink = alternate sites, white lines = locations of seismic reflection profiles.

Figure F2. Location and estimated penetration of Site U1615 on Seismic Reflection Line MEDOC 9 (location in Figure F1). Dashed line = intersection with Seismic Reflection Line MC07. CDP = common depth point, TWT = two-way traveltime.

Figure F3. Lithostratigraphic summary, Hole U1615A. Sedimentary units are shown. See lithology key in Figure F8 in the Expedition 402 methods chapter (Malinverno et al., 2025).

Figure F4. VCD, Hole U1615A. Nannofossils and foraminifera ages and the main physical properties used for unit identification are shown. cps = counts per second. See lithology key in Figure F8 in the Expedition 402 methods chapter (Malinverno et al., 2025).

Figure F5. Section Half Imaging Logger (SHIL) core images showing representative examples of the main lithologies, Site U1615.

Figure F6. Smear slides of main lithologies, Site U1615. PPL = plane-polarized light, XPL = cross-polarized light. A smear slide of Subunit IB was not included because of the coarseness of the volcaniclastic gravel.

Figure F7. Soft-sediment deformation and evidence of mass transport deposits in Unit II, Hole U1615A.

Figure F8. Sediments, Hole U1615A. A. Volcaniclastic gravel with mud particles. B. Volcaniclastic sand. C. Pumice grains. D. Siltstone. E. Sandy silt particles. F. Siltstone. G. Silt. H. Coarse sand.

Figure F9. Planktic foraminifera marker species, Hole U1615A. A, B. *Globigerina bulloides* (3H-4). C, D. *Globigerinoides ruber* (16X-CC). E, F. *Globoconella inflata* (16X-CC). G, H. *Globorotalia excelsa* (3H-CC).

Figure F10. Planktic foraminifera marker species, Hole U1615A. A, B. *Globorotalia scitula* (15X-CC). C, D. *Turborotalia quinqueloba* (15X-CC). E, F. *Neogloboquadrina incompta* (4H-CC). G. *Neogloboquadrina acostaensis* (24X-CC). H. *Neogloboquadrina* spp. (sin) (4H-CC).

Figure F11. Planktic foraminifera marker species, Hole U1615A. A. *Globigerina umbilicata* (16X-CC). B. *Orbulina universa* (16X-CC). C, D. *Globorotalia crassaformis* (24X-CC).

Figure F12. NRM variation, Hole U1615A. A. Intensity of NRM and NRM after demagnetization at 20 mT peak AF. B. NRM inclination. C. NRM inclination of archive halves (orange) after demagnetization at 20 mT peak AF.

Figure F13. AMS, Hole U1614A.

Figure F14. Dip variations of lamination with depth, Site U1615. Green layers = deformed areas (where faults and folds were observed).

Figure F15. Alkalinity, pH, and salinity in IW, Hole U1615A.

Figure F16. Sodium and chloride in IW, Hole U1615A.

Figure F17. Magnesium, calcium, and potassium in IW, Hole U1615A.

Figure F18. Boron, strontium, lithium, and barium in IW, Hole U1615A.

Figure F19. Sulfate, ammonium, phosphate, and sulfide in IW, Hole U1615A.

Figure F20. $CaCO_3$ and total carbonate contents and relative percentages of different carbonate phases, Hole U1615A.

Figure F21. Total organic matter, TOC, atomic TOC/TN ratio, and TS, Hole U1613A.

Figure F22. Relationships between (A) TOC and TN contents and (B) TOC and TS contents, Hole U1613A.

Figure F23. pXRF elemental concentration, Hole U1615A. SHLF = section half, IW SC = IW squeeze cake.

Figure F24. Dissolved methane concentrations in headspace gas samples, Hole U1615A.

Figure F25. Physical properties, Hole U1615A. cps = counts per second. See lithology key in Figure F8 in the Expedition 402 methods chapter (Malinverno et al., 2025).

Figure F26. Temperatures measured near the seafloor and downhole in the Vavilov Basin and local temperature gradient from a least-squares line fit, Site U1615.

Figure F27. Oxygen concentration profile, Hole U1615A. A. 0–70 mbsf. B. Uppermost 0.5 mbsf. See lithology key in Figure F8 in the Expedition 402 methods chapter (Malinverno et al., 2025).

Figure F28. PFD tracer concentrations measured using gas chromatography, Hole U1615A. A. Concentrations in drilling fluids, core exterior surfaces, and core interiors. Drilling fluid concentrations of PFD have a median value of 1.7 PFD/g (dark line) with a number of outlying elevated data points. B. Concentrations in core exterior surfaces and core interiors for microbiological analyses, showing that the variability of tracer detection was lower in the samples collected from core exteriors. Whiskers display values that deviate from the average, although their concentrations remain below the threshold for atypical values.