Figure F1. Regional crustal transect from the Mimir High on the Vøring Transform Margin through the Vøring Basin toward the Trøndelag Platform in the east (after Polteau et al., 2020; for location see Figure F1 in the Site U1565 chapter [Planke et al., 2023b]). Note the local uplift of the Mimir High compared to the central parts of the basin and the large distance to the next well (6504/5-15) that constrains the stratigraphy of the intruded crust. TWT = two-way traveltime. BP = base Pleistocene, MMU = mid-Miocene Unconformity, NTE = near top Eocene, EE = Early Eocene, NTP = near top Paleocene, ILP = intralate Paleocene, BPU = Base Paleogene Unconformity, IMC = intramid-Campanian, NTT = near top Turonian, MC = mid-Cenomanian, MA = mid-Albian, BCU = Base Cretaceous Unconformity, TB = top basement, LCB = lower crustal body.

Figure F2. Depth-converted arbitrary line through the Mimir High high-resolution 3-D seismic cube (Bünz et al., 2020; Lebedeva-Ivanova et al., 2021) (for location see Figure F1B in the Site U1565 chapter [Planke et al., 2023b]) showing the location of the borehole ribbon at the summit and eastern flank of the Mimir High.

Figure F3. Lithostratigraphic summary, Sites U1569 and U1570. Holes are shown along a 085° bearing (Hole U1570B to U1569A) and tied along unit/subunit boundaries (solid black horizontal lines). All ties are supported by lithologic change and biostratigraphic zonation. Dashed lines represent ties that correlate lithologic change within a biostratigraphic zone, aiming to tie holes within a unit when unit boundaries are not available (i.e., Hole U1570C to Hole U1570D). Earliest Eocene in the lithostratigraphic column indicates the PETM. A seismic profile of the transect is also shown.

Figure F4. Lithostratigraphic columns, Holes U1569A and U1570A–U1570D. Preliminary ages are shown with dinocyst zonations (dino zone) (Bujak and Mudge, 1994). Earliest Eocene in the lithostratigraphic column indicates the PETM. Clear lithologic unconformities (i.e., basal Pleistocene) are illustrated with a zig-zag line in the lithology column. (Continued on next two pages.)

Figure F5. Lithologic characteristics of Units I–III. A. Unit I–II transition, Hole U1569A. B. Unit I–II transition, Hole U1570A. C. Brown consolidated clay with nodule in Unit II, Hole U1570B. D. Unit III lithology characterized by sand-rich clay and centimeter-scale concentric nodules.

Figure F6. Lithologic characteristics of Unit IV and Subunits Va and Vb. A. Very dark gray mudstone with the presence of glendonite in Unit IV, Hole U1569A. B. Thin laminated ash beds in very dark gray mudstone underlie a thick ash bed in Subunit Va, Hole U1570D. C. Limestone interval with the presence of glendonite in Subunit Vb, Hole U1570A. D. Very dark gray mudstone with thin ash beds and the presence of diagenetic pyrite in Subunit Vb, Hole U1570A.

Figure F7. Unit VI (Igneous Lithologic Unit 1) relations with Subunit Vb and Unit VII, 396-U1570A-14R through 16R and 396-U1570D-26R and 27R. A, B, E. Dacite with occurrence of euhedral millimetric grains of garnet, cordierite, and graphite. C, D, F. Relation between dacite and sedimentary rocks. Plg = plagioclase, crd = cordierite, grt = garnet, gph = graphite, py = pyrite.

Figure F8. Mineralogy of Igneous Lithologic Unit 1, Site U1570. A. Euhedral millimetric garnet and cordierite associated with pyrite surrounded by groundmass mostly composed of glass. B. Phenocrysts and mineral aggregates within sediments. C. Graphite grains in dacite. D. Garnet grains associated with graphite. Crd = cordierite, py = pyrite, grt = garnet, sed = sediment, plg = plagioclase, gph = graphite.

Figure F9. Igneous Lithologic Unit 1 microstructure, Hole U1570A. A, B. Flow texture: (A) 26R-2, 3.5–6 cm (plane-polarized light [PPL]); (B) 27R-1, 10–13 cm (PPL). C, D. Contact with sediments: (C) 27R-1, 10–13 cm (PPL); (D) 27R-1, 10–13 cm (cross-polarized light [XPL]). E–H. Phenocrysts: (E) 27R-1, 10–13 cm (PPL); (F) 26R-2, 3.5–6 cm (XPL); (G) 27R-1, 10–13 cm (PPL); (H) 26R-2, 42–44 cm (PPL). Plg = plagioclase, qtz = quartz, sed = sediment, py = pyrite, gph = graphite, grt = garnet, crd = cordierite, cpx = clinopyroxene.

Figure F10. Lithologic characteristics of Units VII and VIII, Holes U1569A and U1570D. A. Very dark gray ash-rich siltstone with clay and diagenetic pyrite (Unit VII). B. Ash layers showing parallel lamination (Unit VII). C. Dark green tuffaceous siltstone. D. Color change from dark gray to dark green siltstone transitioning to tuffaceous siltstone in Unit II. A fragment of wood is observed in this interval. E. Unit VII–VIII transition, Hole U1570D. Transition is marked by an erosional surface that separates the tuffaceous siltstone observed in Section 20R-CC from the dark greenish gray bioturbated siltstone with clay that characterizes Unit VIII.

Figure F11. Lithologic characteristics of Unit VIII, Holes U1569A and U1570B–U1570D. A. Very dark greenish gray claystone with silt. B. Very dark gray claystone with parallel lamination. C. Very dark greenish gray bioturbated claystone with silt. D. Greenish gray bioturbated carbonaceous siltstone.

Figure F12. Lithologic features, Hole U1570B. A. Ash-rich sandstone overlies an interval of ash with carbonate. B. Gray conglomerate with presence of diagenetic pyrite. C. Very dark gray siltstone with ash and parallel lamination. D. Gray limestone (Unit IX).

Figure F13. Example of extensional fractures observed across all holes, Sites U1569 and U1570.

Figure F14. Open fractures and dewatering structures, Holes U1569A and U1570A.

Figure F15. Tectonic breccia associated with cataclasite and gouge, 396-U1570C-17R-4.

Figure F16. Earliest Eocene (PETM) age diatom occurrence and preservation illustrating the degradation of diatoms with burial depth, Holes U1569A, U1570D, and U1570A. Diatoms rapidly lose morphologic detail when buried beneath more than 200 m sediment and are typically unidentifiable or absent once buried beneath more than 300 m of sediment. Magnification = 40×. A. 396-U1569A-9X-CC (64 m CSF-A). B. 396-U1570D-17R-CC (113 m CSF-A). C. 396-U1570A-28R-CC (160.5 m CSF-A). D. 369-U1569A-37R-CC (333 m CSF-A).

Figure F17. Overview of microfossil occurrences and abundances, Holes U1569A and U1570A–U1570D. Ages are inferred from microfossils and identified dinocyst (DC) zonations following Bujak and Mudge (1994). PAL = paleontology. Preservation: A = abundant, C = common, F = frequent, T = trace, R = rare, VR = very rare, B = barren.

Figure F18. Planktonic foraminifers, 369-U1569A-1R-CC. A. Wall texture of *Neogloboquadrina pachyderma* (sin.) showing process of encrusting growth (7–12 cm). B. *Neogloboquadrina pachyderma* (sin.) (7–12 cm). C. *Neogloboquadrina pachyderma* (dex.) (7–12 cm). D. *Globigerina bulloides* (7–12 cm).

Figure F19. Planktonic foraminifers, 396-U1569A-9R-CC. A. *Paragloborotalia pseudocontinuosa* (?) (13–18 cm). B. *Globigerinita* sp. (13–18 cm). C. *Paragloborotalia nana* (?) (13–18 cm). D. *Paragloborotalia* sp. (13–18 cm).

Figure F20. Planktonic foraminifers, Hole U1570A. A. *Neogloboquadrina* sp. (1R-CC, 0–4 cm). B. *Neogloboquadrina* sp. (1R-CC, 0–4 cm). C. *Neogloboquadrina pachyderma* (sin.) (1R-CC, 0–4 cm). D. *Globigerina bulloides* (2R-1, 88–89 cm).

Figure F21. Age-depth plots for diagnostic microfossil taxa from Sites U1569 and U1570, going from east (Hole U1569A) to west (Hole U1570B). Levels where samples were taken for microfossil analyses (including samples that were not processed) are shown. First occurrence (FO)/last occurrence (LO) datums and depths are shown for age-diagnostic dinocysts (black) and diatoms (blue). A list of species name abbreviations and FO/LO datums is included in Table T11. Dinocyst zonations follow Bujak and Mudge (1994) for the Paleocene and Eocene and stage names/ages for the Neogene and Oligocene. PAL = paleontology. (This figure is also available in an **oversized format**.)

Figure F22. Magnetic inclination measured on the SRM, Holes U1569A and U1570A–U1570D. Respective lithostratigraphic units and position of discrete samples are also shown.

Figure F23. IW alkalinity, pH, Cl, Br, NH_4^+, and PO_4^{3-}, Hole U1569A.

Figure F24. IW contents of B, Si, S, Mn, and Fe, Hole U1569A.

Figure F25. IW content of alkali and alkali earth metals (Li, Na, K, Mg, Ca, Sr, and Ba), Hole U1569A.

Figure F26. IW alkalinity, pH, Cl, Br, NH_4^+, and PO_4^{3-}, Hole U1570A.

Figure F27. IW alkalinity, pH, Cl, Br, NH_4^+, and PO_4^{3-}, Hole U1570C.

Figure F28. IW alkalinity, pH, Cl, Br, NH_4^+, and PO_4^{3-}, Hole U1570B.

Figure F29. IW content of alkali and alkali earth metals (Li, Na, K, Mg, Ca, Sr, and Ba), Hole U1570A.

Figure F30. IW content of alkali and alkali earth metals (Li, Na, K, Mg, Ca, Sr, and Ba), Hole U1570C.

Figure F31. IW content of alkali and alkali earth metals (Li, Na, K, Mg, Ca, Sr, and Ba), Hole U1570B.

Figure F32. IW contents of B, Si, S, Mn, and Fe, Hole U1570A.

Figure F33. IW contents of B, Si, S, Mn, and Fe, Hole U1570C.

Figure F34. IW contents of B, Si, S, Mn, and Fe, Hole U1570B.

Figure F35. NGR-derived K, U, and Th content, Hole U1569A.

Figure F36. NGR-derived K, U, and Th content, Holes U1570A–U1570D.

Figure F37. Igneous rock composition, 396-U1570D-14R-1, 7–8 cm; 14R-2, 46–47 cm; and 15R-1, 45–47 cm. A. Total alkalis vs. silica (TAS) (Le Maitre IUGS 1989 normalized to 100% water free; Le Maitre, 1989). B. Molecular Na + K/Al vs. the alumina saturation index (Frost et al., 2001) to distinguish peraluminous from peralkaline rocks.

Figure F38. Carbonate, nitrogen, sulfur, and TOC contents from solid squeeze cake samples, Hole U1569A.

Figure F39. Carbonate, nitrogen, sulfur, and TOC contents from solid squeeze cake samples, Hole U1570A.

Figure F40. Carbonate, nitrogen, sulfur, and TOC contents from solid squeeze cake samples, Hole U1570B.

Figure F41. Carbonate, nitrogen, sulfur, and TOC contents from solid squeeze cake samples, Hole U1570C.

Figure F42. Carbonate, nitrogen, sulfur, and TOC contents from solid squeeze cake samples, Hole U1570D.

Figure F43. Physical properties summary, Hole U1569A. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F44. Example of interlayered ash horizons highlighting elevated bulk density, *P*-wave velocity, and MS of the basic composition ashes compared to the background claystone readings, Hole U1569A. cps = counts per second, G. = SHMG.

Figure F45. Physical properties summary, Hole U1570A. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F46. Physical properties summary, Hole U1570B. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F47. Physical properties summary, Hole U1570C. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F48. Physical properties summary, Hole U1570D. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, WR = WRMSL, G. = SHMG.

Figure F49. Dacite intrusion, Hole U1570D. Filtered point data is presented alongside interpolated traces for selected data with a running average of 50 cm and a maximum interpolation gap of 50 cm applied (denoted "r" in headers). cps = counts per second, G. = SHMG, WR = WRMSL.

Figure F50. Summary of wireline log traces collected within the short open hole interval and GR logging data collected from within the drill string, Hole U1570D. r = 50 cm running average. cps = counts per second, HSGR = total spectral gamma ray, RLA = resistivity, RT_HRLT = true resistivity.

Figure F51. Summary of wireline log traces collected within the main open hole interval, Hole U1570D. LCAL = caliper, HSGR = total spectral gamma ray, RLA = resistivity, RT_HRLT = true resistivity, IU = uncalibrated instrument units.

Figure F52. Wireline GR and MS compared to core-based physical properties, Hole U1569A. Wireline data is plotted on the WMSF depth scale, whereas core-based data is plotted on the CSF-A depth scale; the depths are not matched. r = 50 cm running average. cps = counts per second, WR = WRMSL, LCAL = caliper, HSGR = total spectral gamma ray, IU = uncalibrated instrument units.

Figure F53. Wireline bulk density, PEF, sonic *P*-wave, and calculated AI compared to core-based physical properties, Hole U1569A. Wireline data is plotted on the WMSF depth scale, whereas core-based data is plotted on the CSF-A depth scale; the depths are not matched. r = 50 cm running average. G. = SHMG, LCAL = caliper.

Figure F54. Wireline GR, resistivity, and FMS borehole image logging results, Hole U1570D. HSGR = total spectral gamma ray, LCAL = caliper, RLA = resistivity, RT_HRLT = true resistivity.

Figure F55. FMS image log coverage of Logging Unit 3, 396-U1570D-14R through 16R. The clearly resistive and weakly layered nature and mottled internal resistivity texture is shown. HSGR = total spectral gamma ray, LCAL = caliper, RLA = resistivity, RT_HRLT = true resistivity.