Figure F1. A. Bathymetric map showing the locations of Sites U1621 and U1623 on the Bellsund sediment drift along the western margin of Svalbard between the Storfjorden TMF to the south and the Bellsund TMF to the north. Also shown is Site U1622, located on the northwestern extension of the Storfjorden TMF. Glacial troughs: IF = Isfjorden, BS = Bellsund, and SF = Storfjorden. B. Close-up map of Holes U1623A–U1623G. Holes U1623B, U1623C, and U1623G are respectively located 20, 40, and 60 m north-northeast of Hole U1623A; Hole U1623D and Holes U1623E and U1623F are respectively 20 and 10 m southeast of Hole U1623C. C. Close-up map of Holes U1621A–U1621C. Holes U1621B and U1621C are located respectively 20 and 40 m northeast of Hole U1621A along Seismic Line SV15-04.

Figure F2. A. Seismic profile along the northwest–southeast Seismic Line CAGE21-1-HH-05 showing the projected location of Site U1621 and the location of Site U1623. Interpreted reflectors R1–R4a and the maximum penetration depths (Site U1621 = 216 mbsf; Site U1623 = 370 mbsf) are shown. B. Seismic profile along the northwest–southeast Seismic Line CAGE21-1HH-03 showing the projected location of Sites U1623 and U1622 (penetration of 46.5 mbsf). Time is two-way traveltime.

Figure F3. Paired core photographs (left) and X-radiographs (right; dark = high density) showing typical lithologies and boundaries, Holes U1623C and U1622A. A. Gray silt clay with sparse clasts. B. Greenish gray sandy mud with sharp horizontal contact above reddish gray sandy mud with sparse clasts. C. Dark reddish gray sandy mud and faint laminations with sharp uparching boundary overlaying gray silty clay.

Figure F4. Paired core photographs (left) and X-radiographs (right; dark = high density) showing clasts distribution and diamicton, Holes U1623C, U1623A, and U1621A. A. Large clast in a silty clay matrix. B. Transition from diamicton with common clasts (bottom) to sandy mud with rare clasts. C. Muddy diamicton. D. Sediment interval classified as diamicton that is interpreted as a debrite based on the semilithified clasts between ~8 and ~16 cm that is embedded in a sandy mud matrix and on the general appearance in the X-radiograph.

Figure F5. Paired core photographs (left) and X-radiographs (right; black = high density) showing typical sedimentary features, Holes U1621A and U1623A. A. Silty clay containing abundant sand patches. B. Interbedded silty clay with white silt laminae (<0.3 cm) and layers (>0.3–1 cm). C. Heavily bioturbated sediments with moderate biscuiting within a silty clay matrix (drilling disturbance).

Figure F6. Physical properties, Hole U1621A. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Hole U1621A includes Unit I only. cps = counts per second.

Figure F7. Physical properties, Hole U1621B. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Hole U1621B includes Unit I only. cps = counts per second. See legend for lithology in Figure F6.

Figure F8. Physical properties, Hole U1621C. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Hole U1621C includes Unit I only. cps = counts per second. See legend for lithology in Figure F6.

Figure F9. Physical properties, Hole U1622A. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Hole U1622A includes Unit I only. cps = counts per second. See legend for lithology in Figure F6.

Figure F10. Physical properties, Hole U1623A. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Unit and subunit boundaries are displayed in relation to their location at section breaks and within core sections rather than at the corresponding depth because overlapping sections occurred due to gas expansion and are not correctly displayed on the CSF-A depth scale. cps = counts per second. See legend for lithology in Figure F6.

Figure F11. Physical properties, Hole U1623C. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Unit and subunit boundaries are displayed in relation to their location at section breaks and within core sections rather than at the corresponding depth because overlapping sections occurred due to gas expansion and are not correctly displayed on the CSF-A depth scale. cps = counts per second. See legend for lithology in Figure F6.

Figure F12. Physical properties, Hole U1623D. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Unit and subunit boundaries are displayed in relation to their location at section breaks and within core sections rather than at the corresponding depth because overlapping sections occurred due to gas expansion and are not correctly displayed on the CSF-A depth scale. cps = counts per second. See legend for lithology in Figure F6.

Figure F13. Physical properties, Hole U1623F. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Hole U1623F includes Unit I only. cps = counts per second. See legend for lithology in Figure F6. Data and samples from Core 11H to bottom of hole are not reliable because drilling likely penetrated an adjacent hole (See Operations).

Figure F14. Physical properties, Hole U1623G. Density and CIELAB L*, a*, and b* are displayed as dots superimposed with an 11-point running mean. Hole U1623G includes Unit I only. cps = counts per second. See legend for lithology in Figure F6.

Figure F15. Lithostratigraphic correlation, Holes U1621A–U1621C. Site U1621 includes Unit I only. Core lithology is simplified by grouping clay with silty and sandy clay; clayey and sandy silt with sandy and gravelly mud; clayey, silty, and muddy sand with sand; pebble, pebbly cobble and cobble; muddy and sandy diamicton; calcareous and biosiliceous ooze. Clast abundance, laminations, degree of bioturbation, and degree of drilling disturbance are all color coded and shown as histograms. See legend for lithology in Figure F6.

Figure F16. Lithostratigraphic correlation, Holes U1623A, U1623C, U1623D, U1623F, and U1623G. Unit and subunit boundaries are displayed in relation to their location at section breaks and within core sections rather than at the corresponding depth because overlapping sections occurred due to gas expansion and are not correctly displayed on the CSF-A depth scale. Core lithology is simplified by grouping clay with silty and sandy clay; clayey and sandy silt with sandy and gravelly mud; clayey, silty, and muddy sand with sand; pebble, pebbly cobble and cobble; muddy and sandy diamicton; calcareous and biosiliceous ooze. Clast abundance, laminations, degree of bioturbation, and degree of drilling disturbance are all color coded and shown as histograms. See legend for lithology in Figure F15. Data and samples from Core 11H to bottom of hole are not reliable because drilling likely penetrated an adjacent hole (see Operations).

Figure F17. Ternary diagram of sand, silt, and clay percentages of sediment as inferred from smear slides, Holes U1621A and U1623A.

Figure F18. Downhole mineralogy from smear slide analysis, Hole U1623A.

Figure F19. Downhole mineralogy from smear slide analysis, Hole U1623C.

Figure F20. XRD results for clay analysis, Hole U1621A.

Figure F21. XRD results for clay analysis, Hole U1623A.

Figure F22. Biostratigraphy and paleoenvironment, Hole U1621A.

Figure F23. Biostratigraphy and paleoenvironment, Hole U1621B.

Figure F24. Biostratigraphy and paleoenvironment, Hole U1621C.

Figure F25. Biostratigraphic summary, Site U1622.

Figure F26. Biostratigraphy and paleoenvironment, Hole U1623A.

Figure F27. Age-depth model, Site U1623. All encountered biostratigraphic and paleomagnetic datums are shown. Calcareous nannofossils: Ehux = LO *E. huxleyi*, HOGcar = HO acme *G. caribbeanica*, LOGcar = LO acme *G. caribbeanica*, *Plac* = HO *P. lacunosa*, HO *Rasa* = HO *R. asanoi*, LO *Rasa* = LO *R. asanoi*. Diatom datum: *Tjous + Pcur* = HO *Thalassiosira jouseae* and HO *Proboscia curvirostris*, HO *Nsem* = HO *N. seminae*, LO *Nsem* = LO *N. seminae*. Foraminifer datum: Npach = LO *Neogloboquadrina pachyderma*. Dinocysts: Pstel = acme *P. stellatum*. Paleomagnetic boundaries: B/M = Brunhes/Matuyama boundary, Jar.upp = upper Jaramillo Subchron boundary, Jar.low = lower Jaramillo Subchron boundary (see Paleomagnetism).

Figure F28. Biostratigraphic summary, Site U1621. Letters in parentheses refer to the hole(s) where the event is observed.

Figure F29. Age-depth model, Site U1621. All encountered biostratigraphic and paleomagnetic datums are shown. Calcareous nannofossils: Ehux = LO *E. huxleyi*, HOGcar = HO acme *G. caribbeanica*, LOGcar = LO acme *G. caribbeanica*, Plac = HO *P. lacunosa*. Diatom datum: *Tjous + Pcur* = HO *T. jouseae* and HO *P. curvirostris*. Foraminifer datum: Npach = LO *N. pachyderma*. Paleomagnetic limiting age: Sediments above this depth are normal and must be younger than 773 ka (see Paleomagnetism).

Figure F30. Biostratigraphic summary, Site U1623. Letters in parentheses refer to hole(s) where the event is observed.

Figure F31. Downhole variations in magnetic properties, Holes U1621A, U1622A, and U1623A.

Figure F32. MS and ARM, Sites U1621–U1623. Left: Banerjee plot (Banerjee et al., 1981). Right: comparison of MS to ARM_{30mT}/ARM. Solid symbols = Magnetic Zones 1 and 2 (Figure F31). Dashed lines = trend toward the high ARM and MS values measured in Site U1618, U1619, and U1623 greigite nodules. Green shading = range of ARM_{30mT}/ARM ratios observed in the same nodules (see Paleomagnetism in the Site U1618 chapter [Lucchi et al., 2026b] and in the Site U1619 chapter [St. John et al., 2026a]).

Figure F33. Magnetic data for an authigenic nodule (403-U1623D-55X). A. WRMSL MS data. Gray shading = location of B. B. Nodule and surrounding sediments. Yellow square = bulk XRD analysis. Red square = primarily quartz XRD analysis. C. Intensity before and after demagnetization. D. AF demagnetization behavior of NRM. E. AF demagnetization behavior of RM. Red = horizontal plane, blue = vertical plane.

Figure F34. Inclination, Sites U1621–U1623. Dashed lines = expected values for this latitude based on a GAD.

Figure F35. MS and paleomagnetic data, Site U1621. Gray lines = APC/HLAPC archive-half data, gray dots = XCB archive-half data, yellow squares = discrete cube samples. Discrete MS (in SI units) is scaled to WRMSL IU values by dividing by 7×10^{-6} (e.g., Thomas et al., 2003). Archive-half inclinations are plotted as the maximum demagnetization step (generally 15 mT for APC and 30 mT for XCB cores). Discrete cube inclinations are the ChRM calculated using a principal component analysis of demagnetization steps between 20 and 45 mT. GPTS 2020: polarity interpretation and correlation to the geomagnetic polarity timescale (Gradstein et al., 2020). Black = normal, white = reverse, gray = undetermined.

Figure F36. MS and paleomagnetic data, Hole U1622A. Gray lines = APC archive-half data, blue squares = discrete cube samples. Discrete MS (in SI units) is scaled to WRMSL IU values by dividing by 7×10^{-6} (e.g., Thomas et al., 2003). Archive-half inclinations are after 15 mT peak AF demagnetization. Discrete cube inclinations are the ChRM calculated using a principal component analysis of demagnetization steps between 20 and 45 mT. GPTS 2020: polarity interpretation and correlation to the geomagnetic polarity timescale (Gradstein et al., 2020). Black = normal, white = reverse.

Figure F37. MS and paleomagnetic data, Hole U1623A. Gray lines = APC/HLAPC archive-half data, gray dots = XCB archive-half data, purple squares = discrete cube samples. Discrete MS (in SI units) is scaled to WRMSL IU values by dividing by 7×10^{-6} (e.g., Thomas et al., 2003). Archive-half inclinations are plotted as the maximum demagnetization step (generally 15 mT for APC and 30 mT for XCB cores). Discrete cube inclinations are the ChRM calculated using a principal component analysis of demagnetization steps between 20 and 45 mT. Filtered inclination only plots samples with maximum angular deviation values less than 20° and MS values less than 5×10^{-4} SI. GPTS 2020: polarity interpretation and correlation to the geomagnetic polarity timescale (Gradstein et al., 2020). Black = normal, white = reverse, gray = undetermined.

Figure F38. Inclination, Holes U1623A, U1623C, U1623D, U1623F, and U1623G. Comparisons of discrete cube sample ChRM inclination (Figure F37) to archive section half inclinations after maximum AF demagnetization step are shown. Yellow shading = regions where reversal boundaries could be refined.

Figure F39. Age-depth plot with implied long-term accumulation rates, Site U1623. Dashed lines = major reflectors (see Figure F2). Squares = reversal boundaries indicating their upper and lower constraint (Table T10).

Figure F40. Physical properties, Site U1621. Lines = running five-point averages. cps = counts per second.

Figure F41. Physical properties, Site U1622. Lines = running five-point averages. cps = counts per second.

Figure F42. Physical properties, Holes U1623A, U1623C, U1623D, and U1623G. Lines = running five-point averages. cps = counts per second.

Figure F43. MS, Site U1621. Measurements were taken on whole rounds using a pass-through loop sensor (WRMSL) and split archive-half sections using a point-source sensor (SHMSL).

Figure F44. MS, Site U1622. Measurements were taken on whole rounds using a pass-through loop sensor (WRMSL) and split archive-half sections using a point-source sensor (SHMSL).

Figure F45. MS, Holes U1623A, U1623C, U1623D, and U1623G. Measurements were taken on whole rounds using a pass-through loop sensor (WRMSL) and split archive-half sections using a point-source sensor (SHMSL).

Figure F46. NGR, GRA bulk density, and MS, Site U1621. Circles = Hole U1621A, triangles = Hole U1621B, Xs = Hole U1621C. cps = counts per second.

Figure F47. NGR, GRA bulk density, and MS, Site U1622. cps = counts per second.

Figure F48. NGR, GRA bulk density, and MS, Holes U1623A, U1623C, and U1623D. Circles = Hole U1623A, Xs = Hole U1623C, diamonds = Hole U1623D. Hole U1623G data are not plotted to avoid overrepresentation at shallower depths. cps = counts per second.

Figure F49. MAD parameters, Hole U1621A.

Figure F50. GRA bulk density and MAD, Hole U1621A. Measurements were made on the WRMSL (GRA) and discrete samples (MAD).

Figure F51. MAD parameters, Hole U1622A.

Figure F52. GRA bulk density and MAD, Hole U1622A. Measurements were made on the WRMSL (GRA) and discrete samples (MAD).

Figure F53. MAD parameters, Hole U1623A.

Figure F54. GRA bulk density and MAD, Hole U1623A. Measurements were made on the WRMSL (GRA) and discrete samples (MAD).

Figure F55. Thermal conductivity, Hole U1621A. Orange = individual measurements, orange lines = SD, purple = averages.

Figure F56. Thermal conductivity, Hole U1623A. Orange = individual measurements, orange lines = SD, purple = averages.

Figure F57. ASR initial results, Sample 403-U1623C-14F-CC, 20–30 cm. Top: temperature monitoring data used to ensure water bath temperatures were stable. Middle: results from a dummy channel used to ensure that the data logger was operating correctly. Bottom: average values of the 11 ASR measurements collected from the 18 strain gauges every 10 min over ~14 days.

Figure F58. ASR initial results, Sample 403-U1623C-54X-CC, 28–39 cm. Top: temperature monitoring data used to ensure water bath temperatures were stable. Middle: results from a dummy channel used to ensure that the data logger was operating correctly. Bottom: average values of the 11 ASR measurements collected from the 18 strain gauges every 10 min over ~12 days.

Figure F59. ASR initial results, Sample 403-U1623D-38X-CC, 37–47 cm. Top: temperature monitoring data used to ensure water bath temperatures were stable. Middle: results from a dummy channel used to ensure that the data logger was operating correctly. Bottom: average values of the 11 ASR measurements collected from the 18 strain gauges every 10 min over ~6 days.

Figure F60. Gas chromatography results for a headspace sample from Section 403-U1623D-39X-5. Only methane showed apparent degassing.

Figure F61. Violin plots summarizing physical property associations with preliminary lithostratigraphic units/subunits, Holes U1621C, U1622A, and U1623C.

Figure F62. MS data, Holes U1621A–U1621C. Top: MS splice constructed by combining data from all holes. Break in scale is due to high values at some depths with high concentration of authigenic greigite minerals.

Figure F63. Reflectance spectroscopy and colorimetry (RSC) L* and a*, MS, and NGR, Site U1621. cps = counts per second.

Figure F64. Depth scale offset, Site U1621. A. Comparison of mbsf and CCSF scales in the splice and equations to convert between them. B. Growth of cumulative depth offset.

Figure F65. Reflectance spectroscopy and colorimetry (RSC) L*, red-green-blue (RGB) red, MS, NGR, density, and velocity, Site U1622. cps = counts per second.

Figure F66. Primary splice showing MS data, Holes U1623A, U1623C, U1623D, and U1623F. Top: MS splice constructed by combining data from all holes. Break in scale is due to high values at some depths with high concentration of authigenic greigite minerals. (Continued on next page.)

Figure F66 (continued).

Figure F67. Reflectance spectroscopy and colorimetry (RSC) L*, NGR, MS, and density, Site U1623. cps = counts per second.

Figure F68. Alternate splice showing MS data, Holes U1623A, U1623C, U1623D, U1623F, and U1623G. Top: MS splice constructed by combining data from all holes. Break in scale is due to high values at some depths with high concentration of authigenic greigite minerals.

Figure F69. Depth scale offset, Site U1623. A. Comparison of mbsf and CCSF scales in the splice and equations to convert between them. B. Growth of cumulative depth offset. The offset of Hole U1623D from the other holes was likely because we cored into a local depression (see text).

Figure F70. IW chloride, sodium, and salinity, Holes U1621A, U1622A, U1623A, and U1623F. Black arrows = average seawater values.

Figure F71. IW sulfate, alkalinity, iron, and manganese, Holes U1621A, U1622A, U1623A, and U1623F. Black arrows = average seawater values.

Figure F72. IW calcium, magnesium, strontium, silicon, barium, and lithium, Holes U1621A, U1622A, U1623A, and U1623F. Black arrows = average seawater values.

Figure F73. IW potassium and boron, Holes U1621A, U1622A, U1623A, and U1623F. Black arrows = average seawater values.

Figure F74. IW ammonium and phosphate, Holes U1621A, U1622A, U1623A, and U1623F. Black arrows = average seawater values.

Figure F75. Bulk sediment concentration records with smoothed lines for TC, $CaCO_3$, TOC, TN, and C/N ratio, Holes U1621A/U1621C, U1622A, and U1623A. Unit boundaries shown are for Hole U1623A. See Table T4 for corresponding boundary depths for other holes shown in this figure.

Figure F76. Bulk sediment contents of TS, Holes U1621A/U1621C, U1622A, and U1623A. Unit boundaries shown are for Hole U1623A. See Table T4 for corresponding boundary depths for other holes shown in this figure.

Figure F77. Concentrations of methane (CH_4) (Holes U1621A, U1622A, U1623A, and U1623F); ethane (C_2H_6) (Holes U1621A and U1623A); methane at a higher resolution (uppermost ~25 m of Hole U1623F), measured on headspace gas samples from 5 cm^3 of sediment; and methane/ethane ratios (Holes U1621A and U1623A). Unit boundaries shown are for Hole U1623A. See Table T4 for corresponding boundary depths for other holes shown in this figure.

Figure F78. SedaDNA sampling targeting Holocene to Last Glacial Maximum (LGM) sediments, Hole U1621C. Dots = sampling horizons (n=22), gray line = Hole U1621C MS, blue line = moving average, dotted gray lines = tie points to radiocarbon dates from the western Svalbard MS stack (Jessen et al., 2010).

Figure F79. SedaDNA sampling targeting MIS 5, Hole U1621C. Dots = sampling horizons (n=40), gray line = MS, blue line = moving average.

Figure F80. SedaDNA sampling targeting a Brunhes Chron interglacial, Hole U1623C. Dots = sampling horizons (n = 30), gray line = MS, blue line = moving average.

Figure F81. Formation temperature, Holes U1621A, U1622A, and U1623A. Dashed lines = linear regression results for Holes U1621A and U1623A.

Figure F82. Downhole operations for triple combo and FMS-sonic tool strings, Hole U1623D.

Figure F83. Downhole logging data from triple combo and FMS-sonic tool strings, Hole U1623D. Data sets and abbreviations used are shown in Table T24.

Figure F84. Core-log comparison derived from logging and measurements in the core laboratory, Hole U1623D. Data from core scanning and downhole logging are shown on the mbsf depth scale. Core logging data are plotted versus meters CSF, and downhole logging data are plotted versus meters WMSF. A. Density logs from HLDS data versus GRA density data obtained from Hole U1623D cores and discrete MAD measurements from Hole U1623A. B. HSGR data versus natural gamma ray data obtained from Hole U1623D cores. cps = counts per second.