Figure F1. Safety decision tree for LWD/MWD pressure monitoring, Expedition 372.

Figure F2. IODP convention for naming sites, holes, cores, sections, and samples.

Figure F3. Graphic patterns and symbols used on VCDs and example VCD sheet, Expedition 375. cps = counts per second.

Figure F4. Classification of sediment based on grain size (Shepard, 1954). These categories apply regardless of particle composition or mineralogy.

Figure F5. Classification of sediments and sedimentary rocks based on four primary compositional classes divided according to grain size and corresponding terms for unconsolidated and lithified equivalents, Expedition 375.

Figure F6. Continuum of compositional classes encountered during Expedition 375 core description. Siliciclastic end-member can be further divided by grain size (Figure F4). Volcaniclastic end-member can be further divided by grain size (Figure F7). Roughly equal mixtures of volcaniclastic silt (or sand) and siliciclastic silt (or sand) are classified as mixed clastic silt (or sand). Nanno = nannofossil. Note that the term "marl" encompasses the range of lithified mud-rich calcareous ooze to lithified calcareous (nannofossil-rich) mud.

Figure F7. Classification of pyroclastic and volcaniclastic sediment (bold) and lithified rock based on grain size (modified from Fisher and Schmincke, 1984), Expedition 375. See text for further explanation.

Figure F8. Classification of sediment sorting and roundness using the scheme of Folk (1980).

Figure F9. Smear slide description sheet with component categories for general sediment analysis, Expedition 375.

Figure F10. Smear slide description sheet with component categories for pyroclastic and volcaniclastic sediments, Expedition 375.

Figure F11. Representative X-ray diffractogram (generated by MacDiff software) showing diagnostic peaks used for computation of relative mineral abundance, Expedition 375. Enlarged insert shows range of angles used for composite peak area (total counts) generated by chlorite (003), smectite, illite, and kaolinite. Subsidiary peaks are labeled for quartz (Q) and feldspar (F).

Figure F12. Regression curves and corresponding polynomial equations for the relation between known weight percentages of constituents in standard mineral mixtures and integrated peak area (total counts), Expedition 375. r = correlation coefficient. Results were obtained using MacDiff software after the detector and circuit board on the Bruker diffractometer was replaced. See M.B. Underwood and N. Lawler (unpubl. data) for additional assessments of error, including interlaboratory and intralaboratory comparisons.

Figure F13. Statistical fits between relative and normalized abundance of calcite (from XRD analyses, MacDiff software) and carbonate (from coulometric analyses) values using co-located specimens from Site U1520. See Figure F12 for regression curve. Black dashed line represents 1:1 fit. XRD overestimates calcite abundance because of a mismatch in crystallinity between the calcite standard (nannofossil-rich Cyprus chalk) and variably recrystallized marls and chalks from Site U1520. See M.B. Underwood and N. Lawler (unpubl. data) for additional assessments of error, including interlaboratory and intralaboratory comparisons.

Figure F14. Cenozoic and Late Cretaceous chronostratigraphic units (0–101 Ma) and GPTS correlated with calcareous nannofossil zones, modified after Martini (1971), New Zealand Stages (after Raine et al., 2015), southwest Pacific Neogene bolboformid zones (Crundwell and Nelson, 2007), and Paleogene bolboformid zones (Spiegler and von Daniels, 1991) used during Expedition 375. GTS2012 (Gradstein et al., 2012) was adopted for Expedition 375. Black = normal polarity, white = reversed polarity. (Continued on next two pages).

Figure F14 (continued). (Continued on next page.)

Figure F14 (continued).

Figure F15. New Zealand Pliocene–Holocene timescale calibrated to GTS2012 (Gradstein et al., 2012) after Raine et al. (2015) used during Expedition 375. Black = normal polarity, white = reversed polarity. Triangles = base (B), inverted triangles = top (T), solid triangles = formally defined stratotype section and point (SSP), open triangles = no formally defined SSP. Taxa in parentheses denote proxy events.

Figure F16. New Zealand Miocene timescale calibrated to GTS2012 (Gradstein et al. 2012) after Raine et al. (2015) used during Expedition 375. Black = normal polarity, white = reversed polarity. Triangles = base (B), inverted triangles = top (T), solid triangles = formally defined SSP, open triangles = no formally defined SSP. Taxa in parentheses denote proxy events.

Figure F17. New Zealand Paleogene (Paleocene, Eocene, and Oligocene) timescale calibrated to GTS2012 (Gradstein et al. 2012) after Raine et al. (2015) used during Expedition 375. Black = normal polarity, white = reversed polarity. Triangles = base (B), inverted triangles = top (T), solid triangles = formally defined SSP, open triangles = no formally defined SSP.

Figure F18. Ocean Drilling Program Leg 181 Site 1123 *Truncorotalia truncatulinoides* abundance and coiling ratios, planktonic foraminifer bioevents, mean annual sea-surface temperature (SST), and benthic foraminiferal $\delta^{18}O$ values (0–1.2 Ma) (from Crundwell et al., 2008). MIS = marine isotope stage. B = base, Bc = base common.

Figure F19. Adopted marine paleoenvironmental classification and environmental thresholds after Hayward et al. (2010), calibrated paleodepth markers after Crundwell et al. (1994), and unpublished GNS Science data used during Expedition 375.

Figure F20. IODP coordinate systems for archive and working halves and SRM. Data uploaded to LIMS database are given in IODP coordinate convention.

Figure F21. Coordinate convention of discrete samples measured using JR-6A spinner magnetometer.

Figure F22. Protractor used to measure apparent dips, trends, plunges, and rakes on planar and linear features for split core, Expedition 375.

Figure F23. Core reference frame and x-, y-, and z-coordinates used in orientation calculations, Expedition 375.

Figure F24. Calculation of plane orientation (shaded) from two apparent dips, Expedition 375. Intersections of split-core surface, section perpendicular to split-core surface, and section parallel to core direction with plane of interest are shown. (α_1, β_1) and (α_2, β_2) are the azimuths (α) and plunges (β) of traces of the plane on two sections, v_1 and v_2 are unit vectors parallel to traces of the plane on two sections, and v_n is the unit vector normal to plane.

Figure F25. Apparent rake measurement for striations on a fault surface taken from 270° direction of split-core surface trace, Expedition 375. ϕ_a = apparent rake, v_n = unit vector normal to fault plane, v_c = unit vector normal to split-core surface, v_i = unit vector parallel to the intersection line between fault plane and split-core surface.

Figure F26. Lower hemisphere equal-area projections showing procedure for converting 2-D measured data to 3-D data, Expedition 375. Plane attitude determined using two apparent dips on two surfaces. Striation on the plane is also plotted.

Figure F27. APCT-3 deployment during APC operations, Expedition 375.

Figure F28. Wireline logging string used during Expedition 375, Hole U1520C. See Table T10 for tool acronyms.

Figure F29. BHA used during LWD operations, Sites U1518–U1520.

Figure F30. Image orientation to true north for geoVISION tool, Expedition 372.

Figure F31. Resistivity image logs, Expedition 372. A. Bedding. B. Conductive fracture. C. Resistive fracture.