Figure F1. IODP conventions for naming sites, holes, cores, sections, and samples, Expeditions 367 and 368.

Figure F2. Coring systems used during Expeditions 367 and 368. A. APC system. ID = inside diameter. (Continued on next page.)

Figure F2 (continued). B. XCB system. C. RCB system. OD = outside diameter.

Figure F3. Example graphic visual description form (VCD), Expeditions 367 and 368. cps = counts per second.

Figure F4. Lithology patterns used for visual core description, Expeditions 367 and 368.

Figure F5. Symbols and nomenclature used for visual core description, Expeditions 367 and 368.

Figure F6. Siliciclastic-calcareous-biosiliceous ternary diagram used for sediment name classification of different compositions.

Figure F7. Lithologic classification for textural names, Expeditions 367 and 368. A. Shepard ternary classification diagram (Shepard, 1954). B. Biogenic classification. N = nannofossil.

Figure F8. Udden-Wentworth grain-size classification of siliciclastic sediment (Wentworth, 1922), Expeditions 367 and 368.

Figure F9. Example VCDs for igneous rocks from (A) Expedition 367 and (B) Expedition 368 and (C) metamorphic rocks from Expedition 368.

Figure F10. Symbols and nomenclature used in igneous VCDs, Expeditions 367 and 368.

Figure F11. Comparison chart for describing vesicle sphericity and roundness in volcanic rocks, Expeditions 367 and 368. After Expedition 330 Scientists (2012) and Li et al. (2015), modified from Wentworth (1922).

Figure F12. Textures used to describe veins, Expeditions 367 and 368. From Li et al. (2015), modified from Expedition 324 Scientists (2010).

Figure F13. Example thin section report for igneous rocks, Expeditions 367 and 368.

Figure F14. Comparison plots of measured pXRF data on a suite of reference materials (JP-1, BIR-1, BE-N, BCR-2, JB-2, AGV-1, and JA-2) compared to accepted values (preferred values from GEOREM database; **http://georem.mpch-mainz.gwdg.de**). Calibration reference materials were analyzed at the start (11 May 2017; open circles) and end (7 June 2017; solid circles) of the analysis period. Drift over this time period is limited relative to the method precision, so a single calibration curve was calculated from these data for each element (solid black line). Calibration curves were then used to apply a secondary correction to the raw data (see text for details). Dashed line = 1:1 trend. (Continued on next page.)

Figure F14 (continued).

Figure F15. Example structural geology observation sheet, Expeditions 367 and 368.

Figure F16. Symbols and nomenclature used for visual core description, Expeditions 367 and 368.

Figure F17. Vein description scheme used during Expeditions 367 and 368, modified after Expedition 324 Scientists (2010).

Figure F18. Goniometer and plastic protractor template used to measure dip and dip direction of structures, Expeditions 367 and 368.

Figure F19. Core reference frame and coordinates used in orientation data calculation, Expeditions 367 and 368. (α_1, β_1) and (α_2, β_2) = azimuths and apparent dips of traces of the plane on two sections, V_1 and V_2 = unit vectors parallel to traces of the plane on two sections, V_n = unit vector normal to plane.

Figure F20. Dip direction (α_d), right-hand rule strike (α_s), and dip (β) of a plane deduced from its normal azimuth (α_n) and dip (β_n), Expeditions 367 and 368. V_n = unit vector normal to plane. A. $\beta_n < 0°$. B. $\beta_n \geq 0°$.

Figure F21. Azimuth correction based on paleomagnetic data, Expeditions 367 and 368. α_p = paleomagnetic declination, α_d and α_s = dip direction and right-hand rule strike of a plane. A. $\beta_p \geq 0°$. B. $\beta_p < 0°$.

Figure F22. Calcareous nannofossil, diatom, and planktonic foraminiferal events and scaled ages (Gradstein et al., 2012), Expeditions 367 and 368. B = base, Ba = base acme, Bc = base common, T = top, Ta = top acme, Tc = top common, Tr = top regular, X = crossover in abundance. This figure is available in an **oversized format**.

Figure F23. A. IODP coordinates of paleomagnetic samples (after Richter et al., 2007). B. Natsuhara-Giken sampling cubes (7 cm^3 volume) with sample coordinate system. Red hatched arrow is parallel to up arrow on sample cube and points in $-z$-direction. C. Measurement positions in JR-6A spinner magnetometer. D. Coordinate system used for the SRM on board the *JOIDES Resolution*.

Figure F24. Selected Cenozoic marine and terrestrial biostratigraphic zonations. Age is the time equivalent of the rock-record stage. Subepoch groupings of these ages into "late" or "early" are informal common usage. Magnetic polarity zones are scaled to astronomical cycles (e.g., Hilgen et al., 2012; Vandenberghe et al., 2012; Westerhold et al., 2015). Planktonic foraminifer zones and main markers are from GPTS2012 (Hilgen et al., 2012; Anthonissen and Ogg, 2012) with Paleogene modified from Wade et al. (2011), but late Pliocene details for Zones PL4–PL5 between Atlantic (Atl.) and Pacific (Pac.) basins are omitted. Placement of proposed base Chattian marker of last common occurrence (LCO) of *Chiloguembelina cubensis* is relative to Oligocene magnetic polarity chrons; hence, the assigned age to the Rupelian/Chattian boundary is uncertain. Calcareous nannofossil (CN) zones and markers from Backman et al. (2012) and Agnini et al. (2014) are shown with commonly used NN and NP zonations of Martini (1971). Major sea level sequence boundaries and highstands are from Hardenbol et al. (1998). Additional zonations, biostratigraphic markers, geochemical trends, sea level curves, and details on calibrations are compiled in Hilgen et al. (2012) and Vandenberghe et al. (2012) and in internal data sets within the TimeScale Creator visualization system (free at **https://engineering.purdue.edu/Stratigraphy/tscreator/index/index.php**). Modified from Ogg et al. (2016). LGM = last glacial maximum. Megacycles: T = transgression, R = regression. (Continued on next two pages.)

Figure F24 (continued). (Continued on next page.)

Figure F24 (continued).

Figure F25. WRMSL (measures GRA bulk density, magnetic susceptibility, and *P*-wave velocity), Expeditions 367 and 368. Water standard is measured at end of each core to control measurement quality.

Figure F26. NGRL for whole-round cores (conducts 8 measurements at a time in 2 positions, resulting in 16 measurements per core), Expedition 367 and 368. During Expedition 367, scintillation Detector 7 was deficient, so only 14 measurements per core were performed.

Figure F27. NGRL detectors (from Vasiliev et al., 2011), Expeditions 367 and 368. The main NGR scintillation detector unit consists of 8 sodium iodide (NaI) scintillometers arranged along core measurement axis at 20 cm intervals surrounding the lower half of the core section.

Figure F28. SHMG showing *x*-axis caliper and *y*- and *z*-axis bayonets used to measure *P*-wave velocity on split core sections of soft sediments or discrete samples of indurated sediment or hard rock, Expeditions 367 and 368. Insert shows measurement of *P*-wave velocity on a hard rock discrete sample using *x*-axis caliper.

Figure F29. Pycnometer used to measure volume of dry samples, either in small vials for soft sediments or as discrete samples, Expeditions 367 and 368.

Figure F30. Wireline tool strings, Expeditions 367 and 368. Triple combo tool string takes downhole measurements of hole diameter, NGR, bulk density, electrical resistivity, and magnetic susceptibility of the borehole. FMS-sonic tool string measures borehole resistivity images, NGR, and *P*- and *S*-wave velocities. VSI tool string acquires seismic waveform data in a check shot experiment. LEH-MT = logging equipment head-mud temperature, EDTC = Enhanced Digital Telemetry Cartridge, HNGS = Hostile Environment Natural Gamma Ray Sonde, APS = Accelerator Porosity Sonde, HLDS = Hostile Environment Litho-Density Sonde, HRLA = High-Resolution Laterolog Array, MSS = magnetic susceptibility sonde, DSI = Dipole Sonic Imager, GPIT = General Purpose Inclinometry Tool. Except for MSS, all acronyms are trademarks of Schlumberger. Also see Tables T8 and T9.

Figure F31. APCT-3 for in situ temperature measurements, Expeditions 367 and 368.