Figure F1. Schematic of the APC system used during Expedition 402 (see Graber et al., 2002). ID = inner diameter.

Figure F2. Schematic of the XCB system used during Expedition 402 (see Graber et al., 2002).

Figure F3. Schematic of standard BHA for the RCB (left) and APC/XCB (right) coring systems. ID = inner diameter.

Figure F4. Schematic of the RCB system used during Expedition 402 (see Graber et al., 2002). ID = inner diameter, OD = outer diameter.

Figure F5. Depth scales used during Expedition 402. DRF = drilling depth below rig floor, DSF = drilling depth below seafloor, CSF = core depth below seafloor (Method A or B), CCSF = core composite depth below seafloor (not used during Expedition 402), WRF = wireline log depth below rig floor, WSF = wireline log depth below seafloor, WSSF = wireline log speed-corrected depth below seafloor, WMSF = wireline log matched depth below seafloor.

Figure F6. Sediment core flow through *JOIDES Resolution* laboratories during Expedition 402. See text for differences in basement core flow.

Figure F7. Example VCD, Expedition 402.

Figure F8. VCD legend, Expedition 402.

Figure F9. Key to ichnofabric index (bioturbation intensity) used during Expedition 402. (Modified from Droser and Bottjer, 1991).

Figure F10. Sediment classification schemes and nomenclature for siliciclastic and bioclastic sediment/rocks without gravel used during Expedition 402. A. Biogenic-siliciclastic diagram (Expedition 378; Röhl et al., 2022). B. Ternary diagram for terrigenous clastic sediments composed of >50% siliciclastic material (after Shepard., 1954; Jaeger et al., 2014; Röhl et al., 2022).

Figure F11. Mediterranean planktic foraminiferal and calcareous nannofossil zonal schemes adopted for Expedition 402 (Lirer et al., 2019; Di Stefano et al., 2023). Right: comparison with main existing nannofossil schemes for oceanic areas (Martini, 1971; Okada and Bukry, 1980; Backman et al., 2012). GTS2020 = *Geologic Time Scale 2020* (Raffi et al., 2020).

Figure F12. A. Coordinate systems for IODP paleomagnetic samples: archive and working halves. B. Natsuhara-Giken sampling box (7 cm^3) with cube coordinate system. Red hatched arrow is parallel to up arrow on sample cube and points in −*z*-direction. C. Coordinate system used for the SRM on *JOIDES Resolution*. D. Measurement positions in AGICO JR-6A dual speed spinner magnetometer. E. Example of sawn discrete cube sample and discrete sample in plastic sampling box. (Adapted from Expedition 385.)

Figure F13. Rock description flowchart, Expedition 402. Dashed lines = complementary analyses were not performed at all sites. EDS = energy dispersive spectrometry.

Figure F14. Lithologic classification scheme, Expedition 402.

Figure F15. Classification of plutonic rocks, Expedition 402. (Follows Le Maitre et al., 2002.) Plagioclase-clinopyroxene-orthopyroxene triangular plots and olivine-pyroxenes-plagioclase triangle for melanocratic rocks.

Figure F16. Igneous texture terminology used during Expedition 402.

Figure F17. Example hard rock VCD, Expedition 402.

Figure F18. Schematic illustration of how structures were logged during Expedition 402. Top and bottom offsets from top of section of a structure are logged where structure intersects the center line of section half surface. A. Magmatic fabric is logged for the interval over which it occurs and for its thickness measured perpendicular to the layering. B. If structural features do not cross the center line of the core (e.g., veins or fractures), then their center point is logged as its interval. If the structural feature is a network of veins or fractures, the interval over which the network occurs is logged.

Figure F19. Core reference frame for structural and paleomagnetic orientation measurements used aboard *JOIDES Resolution* (modified from Expedition 334 Scientists, 2012), Expedition 402. A. Primary orientation of each core piece is up and down along the core axis. B. Coordinates in both archive and working halves. C. Conventions for labeling samples and thin sections taken from working halves.

Figure F20. Protractor used to measure apparent dips, trends, plunges, and rakes on planar and linear features for split core.

Figure F21. Core reference frame and *x*-, *y*-, and *z*-coordinates used in orientation calculations.

Figure F22. Calculation of plane orientation from two apparent dips. A. Intersection of split core surface and section perpendicular to split core surface. B. Intersection of split core surface and section parallel to core direction. C. Intersection of split core surface and section perpendicular to core direction. (α_1, β_1) and (α_2, β_2) are the azimuths (α) and plunges (β) of traces of the plane on two sections.

Figure F23. Apparent rake measurement for striations on a fault surface taken from 270° direction of split core surface trace. 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 F24. Lower hemisphere equal-area projections showing procedure for converting 2D measured data to 3D data. Plane attitude determined using two apparent dips on two surfaces. Striation on the plane is also plotted.

Figure F25. Predicted distribution of a random set of planar features. Curve I shows the effect of spherical geometry on true dip data. Curve II shows the bias effect introduced by sampling with a vertical borehole. Curve III combines the two effects and shows predicted distribution of a random set of planes in a vertical borehole.

Figure F26. Intensity ranks used to describe macroscopic and microscopic observations for magmatic foliation, gabbro and peridotite crystal-plastic deformation, fault rock deformation, serpentine network orientation, vein density, and open fracture density, Expedition 402.

Figure F27. Classification of fracture and fracture network morphologies, Expedition 402.

Figure F28. Characteristics of veins and vein network classifications used by both structural geology and metamorphic petrology teams, Expedition 402.

Figure F29. Relationship between hydrogen index (HI) and oxygen index (OI) as well as the location of Types I, II, IIS, III and IV kerogen, Expedition 402.

Figure F30. pXRF element calibration curves, Expedition 402.

Figure F31. Raw pXRF data scatter plots, Expedition 402. A. <50 wt%. B. >50 wt%. C. All totals.

Figure F32. A. XSCAN. B. NGRL.

Figure F33. WRMSL.

Figure F34. SHMSL.

Figure F35. A. Thermal conductivity station. B. Needle probe tool, which was often unsuccessful in measuring thermal conductivity. C. Puck tool, which was primarily used for sediments and hard rocks.

Figure F36. MAD workstation. A. Mettler Toledo electronic balances. B. Pycnometer. C. Wheaton glass vials (soft rocks) and cube (hard rock) sample.

Figure F37. Gantry system used for measuring V_P in three directions.

Figure F38. Wireline tool strings used during Expedition 402. LEH-PT = logging equipment head-tension and mud temperature, EDTC = Enhanced Digital Telemetry Cartridge, HNGS = Hostile Environment Natural Gamma Ray Sonde, HLDS = Hostile Environment Litho-Density Sonde, HRLA = High-Resolution Laterolog Array, MSS = Magnetic Susceptibility Sonde, DSI = Dipole Sonic Imager, FMS = Formation MicroScanner, GPIT = General Purpose Inclinometry Tool.

Figure F39. SET2 and APCT-3 sensor calibration, Expedition 402. Tref = reference temperature measured by a Fisher Scientific quartz digi-thermo probe.