Figure F1. Expedition 352 sites at the IBM fore arc. Red circle = Site U1441 (proposed Site BON-6A), yellow circles = other Expedition 352 sites. White lines = multichannel seismic lines (S. Kodaira, pers. comm., 2013).

Figure F2. Location of Site U1441 along multichannel seismic Line IBr11 (S. Kodaira, pers. comm., 2013). Green bar = sediment, blue bar = igneous basement. CDP = common depth point.

Figure F3. Lithostratigraphic summary of sediment cores.

Figure F4. Brownish mud with medium to coarse-grained sand in Subunit IA and silty calcareous ooze in Subunit IB, Hole U1441A. A volcanic ash layer is disseminated throughout the top of Subunit IB as a result of drilling disturbance.

Figure F6. Reddish-brown, muddy, matrix-supported breccia/conglomerate, Hole U1441A. Clasts, up to several centimeters in size, are pumiceous (paler than the matrix) and scattered randomly through the muddy matrix.

Figure F5. Silty calcareous ooze with nannofossils and sparse planktonic foraminifers, Hole U1441A. Two discrete volcaniclastic layers (darker interbeds) are intercalated with background sediment.

Figure F8. Greenish, relatively noncalcareous clay with volcaniclastic silt, Hole U1441A.

Figure F9. Pale brown gravel (fine conglomerate) with poorly sorted pumiceous clasts dispersed throughout silty clay, Hole U1441A.

Figure F7. Pinkish gray silty clay, Hole U1441A. Note the ash-rich layer, which is disseminated throughout the background sediment owing to drilling disturbance.

Figure F10. Stratigraphic column of sedimentary units with calcareous nannofossil biozonation indicating approximate ages of each unit.

Figure F11. Stratigraphic summary of basement cores. Red line indicates a fault.

Figure F12. pXRF chemostratigraphy data. Note the steady increase with depth in Ti/Zr and Cr ppm through Units 1, 2, and 4; Unit 3 has abnormally high values for both. See text.

Figure F13. Macroscopic features, Hole U1441A. A. Large volcanic clasts, Unit 1 (10R-1). Upper piece is massive, diktytaxitic, and fine grained; lower piece is microcrystalline with abundant splayed pipe vesicles. B. Homolithic breccia composed of subrounded to subangular basaltic clasts cemented by a sandy matrix, Unit 1 (16R-1). Some clasts with abundant pipe vesicles and glassy margins. C. Aphyric microcrystalline basalt with glassy chilled margin, Unit 2 (18R-1). D. Augite phenocrysts in aphanitic groundmass, Unit 3 (19R-1). E. Light gray aphyric basalt, typical of Unit 4 (22R-1).

Figure F14. Microscopic features, Site U1441. A. Homolithic breccia composed of hypohyaline clasts in a volcanic sandy matrix containing crystal fragments (U1441C-16R-2; TS170; plane-polarized light [PPL]). B. Augite glomerocrysts in a glassy matrix (U1441C-18R-1; TS175; cross-polarized light [XPL]). C. Vitrophyric basalt showing layering, defined by domains of trachytic plagioclase microlites and coarser plagioclase phyric-rich, randomly orientated domains (U1441C-19R-1, TS177; XPL) D. Intersertal to intergranular trachytic basalt (U1441A-22R-1, TS172; XPL).

Figure F15. Alteration features, Hole U1441A. A. Olivine completely altered to smectite and calcite (19R-1; TS177). B. Groundmass completely altered to zeolite fiber and tiny iron oxides (19R-1; TS177). C. Devitrified groundmass with augite phenocryst and acicular plagioclase microlites (15R-1; TS168). D. Zeolite filled vesicle with quenched oxide in relatively fresh groundmass (22R-1; TS172; scanning electron microscope [SEM]).

Figure F16. Vein features, Hole U1441A. A. Calcite vein network in homolithic breccia. B. Calcite and clay veins in aphyric basalt (14R-1). C. Calcite vein containing euhedral grains of zeolite, probably analcime, and clay at the border of the vein can be observed. (15R-1; TS168, XPL).

Figure F17. H_2O and CO_2 vs. LOI for igneous samples, Hole U1441A.

Figure F18. Total alkali content vs. SiO_2 volcanic rock classification diagram (Le Bas et al., 1986). All mafic rocks drilled at Site U1441 are basalts.

Figure F19. MgO vs. SiO_2, Al_2O_3, CaO, and K_2O, Site U1441. Compositions are compared to a compilation of published compositions of MORB (Jenner and O'Neill, 2012) together with IAT (GEOROC database; August 2014) and FAB (Reagan et al., 2010) from the IBM subduction system.

Figure F20. Ni and Cr vs. MgO, Site U1441. Compositions are compared to a compilation of published compositions of MORB (Jenner and O'Neill, 2012) together with IAT (GEOROC database; August 2014) and FAB (Reagan et al., 2010; Ishizuka et al., 2011) from the IBM subduction system.

Figure F21. Ti vs. Zr, Y, and V, Site U1441. Compositions are compared to a compilation of published compositions of MORB (Jenner and O'Neill, 2012), together with IAT (GEOROC database; August 2014) and FAB (Reagan et al., 2010; Ishizuka et al., 2011) from the IBM subduction system.

Figure F22. Bedding dip angles as a function of depth, Hole U1441A.

Figure F23. SPO defined by acicular plagioclase crystals, Hole U1441A (22R-1, 8–11 cm; TS172; XPL).

Figure F24. Conjugate veins, Hole U1441A (21R-1, 57–72 cm).

Figure F25. Shear zone, Hole U1441A (20R-1, 22–24 cm; TS179; PPL).

Figure F26. Twinning and undulose extinction of calcite within a vein, Hole U1441A (18R-1, 5–8 cm; TS175; XPL).

Figure F27. WRMSL physical properties of sediment cores. Blue points = raw values, red lines = filtered data (mean values in 50 cm range).

Figure F28. SHMSL physical property data and discrete sample MAD measurements of sediment cores. L*, a* b*: blue points = raw values, red lines = filtered data (mean values in 50 cm range). MAD and porosity: solid circles = discrete values (blue = dry density, black = bulk density, purple = grain density, red = porosity). Black points in MAD are WRMSL GRA density data shown for comparison.

Figure F29. WRMSL physical property measurements of basement cores. Blue points = raw values, red points = filtered data (maximum values of rock pieces ≥10 cm in length), red lines = trend of maximum value in each core.

Figure F30. SHMSL and discrete sample physical property measurements of basement cores. Discrete samples were used for magnetic susceptibility (green diamonds), *P*-wave caliper (PWC), and MAD measurements. L*, a*, b*: blue points = raw values, red points = filtered data (maximum values of rock pieces ≥10 cm in length), red lines = trend of maximum value in each core.

Figure F32. RCB sediment core magnetic stratigraphy, Hole U1441A. Inclination measurements after 30 mT AF demagnetization. Polarity: hatched zones = gaps in recovery where polarity cannot be interpreted. GAD = geocentric axial dipole.

Figure F31. Thermal conductivity measurements of whole-round cores for sediment (black points) and discrete igneous rock samples (blue points). Solid red line with error bars: mean and standard deviation for the Hole U1441A sedimentary thermal conductivity measurements. Thermal conductivity is 0.86 ± 0.052 W/(m·K).

Figure F33. Representative AF demagnetization results, Hole U1441A. This sample shows a slight overprint with the NRM direction, several consistent demagnetization steps (7–25 mT), and then gradual skewing of the magnetization by ARM. A. Equal area stereonet showing the direction of the magnetization vector endpoint at different AF steps. B. Orthogonal vector (Zijderveld) plot showing the magnetization endpoints plotted on 2 orthogonal planes. C. Normalized magnetization strength, *M*, at a given AF field demagnetization, normalized by the maximum magnetization strength, M_{max}.

Figure F34. AF demagnetization results for a sample that produced erratic results, Hole U1441A. This sample has an unstable magnetization that changes direction at different demagnetization steps. It was not possible to define a reliable direction by PCA. Plot conventions as in Figure **F33**.

Figure F35. Representative thermal demagnetization results for a well-behaved sample displaying partial self-reversal (Doubrovine and Tarduno, 2004, 2005), Hole U1441A. Between 250° and 350°C, the normalized magnetization increases and the vector endpoint moves away from the origin, indicating a partial self-reversal. Plot conventions as in Figure **F33**.

Figure F36. Representative thermal demagnetization results, Hole U1441A. This sample displays 2 components and a plateau in the demagnetization between 250° and 350°C. Plot conventions as in Figure **F33**.

Figure F37. pARM acquisition for three representative samples, Hole U1441A. Values measured with a sliding window of 10 mT in a direct-current field of 0.2 mT superimposed on an AF maximum field of 100 mT (Jackson et al., 1988). The field indicated on the *x*-axis corresponds to the higher field in the interval in which ARM is applied. For example, the point at 20 mT is the pARM acquired in the 20–15 mT interval.

Figure F38. Inclination and lithology comparison, Hole U1441A. Inclinations derived from PCA calculations from AF and thermal demagnetization. TH = thermally demagnetized, AF-SRM = AF-demagnetized archive core pieces.