

Figure F1. Expedition 397T transit path (red line). Stars show locations of Sites U1584 and U1585. Topography is from the GMRT synthesis (Ryan et al., 2009).

Figure F2. Bathymetry map of the northern Guyot Province, showing the Tristan, Gough, and Center track edifices, as well as drill sites for Expeditions 391 and 397T. Heavy blue line = Seismic Line TT-01. Red dots = Expedition 391 and 397T site locations. Green dots = the southern two sites (525 and 528) that recovered basalt in the DSDP Leg 74 transect (Moore et al., 1984). Plotted bathymetry is the SRTM15+ predicted bathymetry data set (Tozer et al., 2019). Contour interval is 1 km.

Figure F3. Walvis Ridge bathymetry (GMRT synthesis; Ryan et al., 2009), hotspot age models, previous drill sites, and proposed drill sites. Solid line = central plume track of the O'Connor and Le Roex (1992) hotspot model, with dots every 10 Ma. Dashed line = Torsvik et al. (2008) fixed hotspot model, with circles every 10 Ma. Yellow stars and dashed line = moving hotspot model of Doubrovine et al. (2012). Small bold numbers give ages in Ma. Squares = DSDP and ODP holes drilled along Walvis Ridge. Red dots = drill sites for Expeditions 391 and 397T. Inset shows location of Walvis Ridge (WR) in the South Atlantic. MAR = Mid-Atlantic Ridge.

Figure F4. Walvis Ridge age progression from radiometrically dated igneous rocks. Samples with enriched mantle one (EMI) composition follow a tight linear trend. Exceptions are samples with high μ (HIMU)-type composition that yield ages ~30–40 Myr younger than the underlying basement with an EMI-type geo-

chemical composition. Vertical blue bands = Expedition 391 and 397T sites, denoting estimated ages (see Homrighausen et al., 2019, for sources of age data).

Figure F5. Lithostratigraphic synthesis, Site U1584.

Figure F6. Lithostratigraphic synthesis, Site U1585.

Figure F7. Stratigraphic column illustrating recovery of igneous basement, Hole U1585A.

Figure F8. Natural remnant magnetization intensity and paleomagnetic inclination for sediment cores, Hole U1585A. Intensity is shown on a logarithmic scale. Inclination: gray dots = NRM, black dots = after 20 mT alternating field (AF) demagnetization, red dots = discrete cube samples, open symbols on the zero line = samples that did not produce satisfactory demagnetization results. Magnetic polarity: black = normal, white = reversed, gray = cannot be determined. See Figure F6 for lithology legend.

Figure F9. Natural remnant magnetization intensity and paleomagnetic inclination for basalt cores, Hole U1585A. Intensity is shown on a logarithmic scale. Inclination: gray dots = NRM, black dots = after 20 mT alternating field (AF) demagnetization, red dots = discrete cube samples, open symbols on the zero line = samples that did not produce satisfactory demagnetization results. Section is entirely reversed polarity. See Figure F7 for lithology legend.