**Auxiliary Material for**

# Sedimentation Rates Test Models of Oceanic Detachment Faulting

Ross Parnell-Turner\*, Johnson R. Cann, Deborah K. Smith, Hans Schouten,, Dana Yoerger, Camilla Palmiotto, Alexei Zheleznov and Hailong Bai

(\*Department of Earth Sciences, University of Cambridge, Madingley Road, Cambridge, CB3 0EZ, UK)

Geophysical Research Letters, 2014

**Introduction**

This auxiliary material contains one figure showing six photographic images acquired by the TowCam system during Cruise KN210-05 in Summer 2013. These images are located near Sentry dive 181 and 180, and illustrate variations in sediment cover between two oceanic detachment faults on the mid-Atlantic Ridge near 16.5**°**N.

**1. fs01.pdf (Figure S1).** Seafloor photographs acquired using TowCam. **a)** Sidescan sonar map of Sentry dive 181. Blue line = location of TowCam dive TC7; white circles = location of seafloor TowCam photographs in (c) to (g); dashed line with tick marks = detachment fault termination. **b)** Sidescan sonar map of Sentry dive 180. Blue line = location of TowCam dive TC6; white circle = location of seafloor TowCam photograph in (h). c) Photograph showing sediment covering corrugated detachment slope footwall at dive 181. d) Thin sediment with frequent rock outcrops near base of detachment slope footwall at dive 181. e) Exposed basement rocks and rubble at detachment fault termination at dive 181. f) View looking down on ~10 m termination scarp at dive 181. Note steep scarp and thick sediments lying on top of hanging wall in upper part of photograph. g) Sediment cover on hanging wall side of termination, dive 181. h) Sediment cover with occasional outcrops on corrugated detachment surface at dive 180.