

2008 Fall Meeting  
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Cite abstracts as **Author(s) (2008), Title, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract xxxxx-xx**

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HR: 0800h  
AN: **B21A-0319**  
TI: [Discovery of Off-Axis Melt Lenses at the RIDGE-2000 East Pacific Rise Integrated Studies Site](#)  
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AB: The first multi-streamer 3D seismic reflection experiment conducted aboard the *R/V Marcus Langseth* was carried out in July-August 2008 at the RIDGE-2000 Integrated Studies Site at the East Pacific Rise between 9°37'N and 9°57'N. One of the major findings of this cruise is the presence of at least three regions with prominent near-axis crustal reflectors that we interpret as off-axis melt lenses (OAML) injected at mid-crustal levels to both the east and west of the ridge crest. In some instances these regions are associated with subtle topographic expressions of seafloor volcanism. The first set of OAML reflections was discovered near 9° 54'N at distances from the ridge axis that range from ~4 to ~7 km, and extending ~6.3 km in the ridge-parallel direction. Two-way travel times from the seafloor to the OAML are 750-830 ms, which correspond to depths of ~1,800-2,000 m (assuming an average upper crustal velocity of 4.7 km/s), although in some cases there is evidence for deeper (~1,420 m, or ~3,330 m) reflections farther off-axis forming a staircase-like system of melt lenses. A second set of OAML reflections was discovered further south near 9° 39'N also within 3-6 km east of the spreading axis, and extending ~3.3 km in the ridge-parallel direction. Crustal travel times to these OAML reflections are 710-830 ms (1,700-2,000 m below seafloor). In this region the OAML is locally underlain by deeper reflections at depths of 1,300 ms (~3,100 m) that could indicate off-axis melt sill intrusions at multiple levels. A smaller OAML was found within 2 km west of the axis near 9° 52'N. In this paper we present preliminary cross-sections of this dataset to evaluate the extent and general characteristics of these off-axis events, which highlight the importance of off-axis magmatism in crustal accretion along this section of the East Pacific Rise.  
DE: 3025 Marine seismics (0935, 7294)  
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