**Letters of Intent: EPR**
**Target Date: August 15, 2003**

**An Upper Mantle Imaging Experiment of the East Pacific Rise at 9-10ºN**

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We will propose a seismic experiment to investigate the 3-D structure of mantle flow and melt distribution in the vicinity of the 9º50'N East Pacific Rise ISS. Along this ridge segment between the Clipperton and Siqueiros fracture zones, the Undershoot Experiment has shown that there are distinct, low-P-wave-velocity anomalies in the uppermost mantle spaced at 10-30 km intervals, including an anomaly immediately beneath the ISS site. These anomalies could represent the top of discrete, diapir-like upwellings or melt concentrations. The experiment design will address the three-dimensionality of mantle flow beneath the ISS including the depth extent of these known velocity anomalies. In addition, it will investigate the interaction between the Lamont Seamounts and the EPR and the nature of the termination of upwelling at the Clipperton fracture zone. A seismic array – comprised of tens of ocean bottom seismometers deployed for approximately one year – will record local, regional and teleseismic earthquakes. These data will be used to image the 3-D isotropic and anisotropic seismic structure of the upper mantle and to map the location and character of seismic discontinuities. Active source data will also be collected along selected profiles. We plan to submit the proposal to either the Aug. 15, 2003 or the Feb. 15 2004 target date.