

**AAPG Annual Meeting  
March 10-13, 2002  
Houston, Texas**

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## **Airborne Micromagnetics' Ability to Produce Prospect Leads in the Gulf Coast's Transition Zone and Onshore**

A percentage of the light hydrocarbons escaping from petroleum reservoirs move in a vertical to near-vertical path to the surface. The accompanying geochemical processes create locally anomalous rock properties in the overlying near-surface formations that are geophysically measurable. Depending on the chemical elements involved, the magnetic properties of the minerals present are changed and the magnetic field locally weaker or stronger and recognizably anomalous.

Because local magnetic anomalies can also be caused by depositional processes or the structuring of the shallow sediments, surface methods are employed to evaluate each magnetic lead. The priority is to determine whether or not the magnetic anomaly signifies an alteration zone and, if so, the degree of active hydrocarbon seepage.

This paper's intent is to demonstrate that modern airborne magnetic survey, micromagnetics, can provide; (1) a more detailed picture of basement structure and topography; (2) a regional perspective of the near-surface structural grain; and (3) specific targets that have the potential of being seep-related and truly worthy of the greater expense of seismic definition, leasing and drilling. Micromagnetic survey has the ability to quickly and cost-effectively initiate the development of viable drilling prospects in the Gulf Coast, onshore, in the transition zone and on the Continental Shelf.