

# **Optimizing Lateral Placement and Production while Minimizing Completion Costs Using Down-hole Geochemical Logging**

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## **Abstract**

Shale plays are an extremely difficult arena in which to explore. Lack of heterogeneity is not the only problem. The Eagle Ford play, for example, has numerous hydrocarbon sources and multiple stacked zones. These multiple stacked pays result in mixed drilling success with both economic and noneconomic drilling results. In addition, there are numerous migration pathways in various parts of the field and charge source or kitchen vary with placement in the field as well.

Amplified Geochemical Imaging and Downhole Geochemical Logging technologies are two applications that can be used in conjunction to provide a 3-dimensional hydrocarbon profile to enhance understanding and success in unconventional exploration.

Amplified Geochemical Imaging is a direct surface hydrocarbon measurement technique that measures the vertical migration of volatile hydrocarbon compounds from subsurface reservoirs. These microseepage hydrocarbon compounds, up to C<sub>20</sub>, can be captured and measured at the surface resulting in the ability to identify and map subsurface hydrocarbon systems as well as clearly differentiate between various hydrocarbon phases, such as gas, condensate, or oil. These hydrocarbon maps provide a horizontal assessment of hydrocarbons across the field and can then be used to demarcate transition lines between the various hydrocarbon phases and direct exploration efforts to areas of higher profitability. This ability makes Amplified Geochemical Imaging a unique tool as a “pre-drill” technology.