

The Lower Barnett Shale in the T.U. Blakely No.1 and Mitchell T.P. Sims No. 2 Well, Wise County, Texas: A Moderately Mature, Source Rock

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Within the last five years, a great deal has been written about the Lower Barnett Shale. Unfortunately, the writers, who are responsible for most of the published papers, have not conducted what we believe to be an accurate assessment of the stratigraphic section. They ignored one of the best tools available to them, visual kerogen, did little in the way of analytical geochemistry, and, to our knowledge, no palynology. Much of their work is based on Rock-Eval Analyses, thin sections and detailed lithologic descriptions of cored materials.

Our interpretations, regarding the level of thermal maturity, of the Lower Barnett shale in the T.U. Blakely No. 1 and Mitchell T.P. Sims No. 2 wells, disagrees with those of Pollastro, et al., Hill, et al., and Jarvie, et al., as presented in the April 2007 issue of the AAPG Bulletin.

Lower Barnett sediments, in the wells we examined, contained an abundance of algae and herbaceous plant material rich in chlorophyll and cellulose. The organics, extracted from cores of the Lower Barnett shale, are at a moderately mature stage of thermal maturity (± 0.95 %Ro) and definitely not within the thermally mature wet gas-gas condensate window (± 1.25 %Ro).

The organic matter is dominated by fresh to brackish water algal colonies and cysts (i.e., forms related to *Pediastrum* sp. and the desmids). Marine dinoflagellates and acritarchs are noticeably absent (*Tasmanites* sp., was not observed). Trilete spores, pollen and woody components (i.e., tracheids, etc.) are very rare throughout the entire stratigraphic sequence. Fragments of corals, bryozoans, sponges, arenaceous and calcareous foraminiferal tests and radiolarians do occur but this does not necessarily mean that the Lower Barnett is a marine sequence. It is just as plausible that the marine microfossils were transported into the depositional site by oceanic waters during storm surges, fluctuating sea levels, recycling, etc.

Kerogen and geochemical data, from the two wells we examined, suggests that the organics accumulated in a fresh to brackish water environment (i.e., large lakes, coastal swamps, embayments, or a marshy plain in association with a broad, shallow, shelf) that was probably in close proximity to a deep-marine environment.