

Appalachian Devonian Gas Isotopes Suggest Lower Maturity Plays than in the Fort Worth Basin Barnett Play, Jackie Reed, Reed Geochemical Consulting, Hilton Head Island, SC 29926, jreed0301@aol.com; John Zumberge and Stephen Brown, GeoMark Research, Houston, TX 77095, jzumberge@geomarkresearch.com

Gas and source rock analyses from more than 150 wells in the Appalachian Basin indicate that the thermal maturity criteria for successful Devonian shale gas wells is much different than that for wells in the Barnett Shale in the Fort Worth Basin. Regional production data, gas isotopes, and vitrinite reflectance measurements show that liquid cracking, that is, high maturity conditions, are not necessary for gas production within the Appalachian Devonian shales. In addition to thermogenic gas, many of the successful wells are interpreted to show a substantial contribution from biogenic gas that has been previously unrecognized in the basin. Stable isotope compositions for these gases, unlike many other biogenic gases, are relatively isotopically heavy and indicate methanogenesis in a CO₂ limited system. Collectively, these data suggest that a geologically wider range of exploration opportunities may exist in the Appalachian Basin than in the Fort Worth Basin.