

Identification of Friable and Cemented Jackfork Sandstones in Southeastern Oklahoma

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A subsurface facies analysis of the Jackfork Group in southeastern Oklahoma reveals the presence of both friable and highly cemented sandstones which may have implications on production of gas in the area. The Pennsylvanian (Morrowan) Jackfork Group is a sequence of strata generally thought to be of deepwater origin, deposited in the Ouachita Basin. The purposes of this research are to (1) document the subsurface occurrence of friable and indurated sandstone and (2) place these sandstones into a sequence stratigraphic framework. The study incorporates data from 32 wells, although the type and completeness of data vary from well to well. Various facies are identified in each well in order to determine recurring patterns that indicate depositional environment. Faults are identified in the wells so that stratigraphic interpretation is not influenced by structural elements. Faults and fracture zones are recognized using cumulative dip and dip vector azimuth plots derived from dipmeter logs. Upon the identification of faults, a combination of conventional logs, dipmeter logs, and cuttings provide useful information for building facies classification schemes for this deepwater (turbidite) system. Certain characteristics can be determined using well logs, including lithology, hydrocarbon concentration and porosity. Cuttings allow an opportunity to calibrate well logs to actual lithologies and to help differentiate zones containing highly porous, possible gas-bearing sandstones from well-cemented sandstones (which may have fracture porosity and permeability). The relation between sandstone type and depositional sequence framework is discussed. Data was provided by Ward Petroleum of Enid, OK.