
Problems and Progress in Defining Louark Group Lithostratigraphic Boundaries: Results from Examination of Well Samples and Recent Geophysical Logs

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ABSTRACT

The definitions of stratigraphic boundaries within the Jurassic Louark Group in the northwest Louisiana subsurface remain problematic. Recent deep well drilling has highlighted ambiguity and uncertainty in delineating Haynesville formation from over- and underlying Bossier and Smackover formations, respectively. The uncertainty is primarily due to lithofacies variations between recent Haynesville fairways on and around the Sabine Uplift versus historic Smackover fairways in which the Haynesville was originally recognized north and northeast across the North Louisiana Salt Basin. Additionally, historic attempts to resolve members within Louark formations and to interpret regionally complex lithostratigraphic topology have produced models that are conflicting and to some degree impractical. The present study attempts to more clearly define Louark stratigraphic boundaries from a basis of existing models, older and recent geophysical well data, and well cuttings and cores. Recent drilling has added geophysical data that refine the correlation grid. Logging of well samples from Shongaloo, Cotton Valley, and Elm Grove fields help with interpretation of well log signatures and with definition of formation lithologies. The Bossier-Haynesville boundary definition seems to be recognizable as a marine transgressive signature that is possibly unconformable at some localities. The Haynesville-Smackover boundary is more problematic because of interfingering of marine quartz arenites with oolite packstones in the original type area compared to more uniform mudstone and sandy mudstones in the vicinity of the Sabine Uplift.