
Stratigraphic Relationships and Nomenclature of the Cotton Valley and Louark Groups, Northwest Louisiana Subsurface

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ABSTRACT

This study examines lithostratigraphic relationships among upper Jurassic – early Cretaceous (upper Kimmerigian – lower Berriasian) strata in the northwest Louisiana subsurface. Stratigraphy models and nomenclature are based primarily upon geophysical well data, borehole specimens, and published models of stratigraphic architecture. Well log correlations are constrained by petrography of available drill cuttings and cores. One objective is to refine regional stratigraphic nomenclature with scientific rigor while honoring unit names inherited from the history of petroleum exploration in north Louisiana. A second objective is a database of geophysical well logs referenced to the stratigraphy model.

Interpretations confirm relatively simple widespread sheet stacking of middle to upper Cotton Valley formations versus more complex lithofacies arrangement among lower Cotton Valley (basal Bossier) and Louark strata. These complexities in the form of oolite shoals interdigitated with siliciclastic mudstones and sandstones have historically been a source of uncertainty in nomenclature, and at present is manifested in ambiguous definition of the Haynesville formation in northwest Louisiana and east Texas. Refinements to regional stratigraphic models and nomenclature yield an improved model for discriminating Haynesville from overlying Bossier and underlying Smackover formations on a basis of wellbore geophysics and lithology. Tabulated data is an essential reference for consistency among exploration models and regulatory definitions.