

THE COTTON VALLEY SANDSTONE OF EAST TEXAS: A LOG-CORE STUDY¹

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ABSTRACT

A comparison of calculations of various reservoir parameters, from logs and cores, provide guidelines for understanding reservoir evaluation in the Cotton Valley Sandstone of East Texas. The cores and logs are from the Carthage field area in Panola County. In these rocks, grain size distribution and the degree of shaliness, in addition to porosity, controls permeability and irreducible water saturation. Clays in the Cotton Valley are mainly illite and chlorite. Cementation factor and saturation exponent values vary on a bed-by-bed basis; however, values of $a = 1$, $m = 1.83$, and an average value of $n = 1.89$ are acceptable for general evaluations. Sun's BITRI program was used to compute values for lithology porosity and water saturation, in good agreement with standard core and x-ray analysis. Cotton Valley sandstone intervals with porosities less than 4% appear to be non-productive.

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