

LOG EVALUATION OF WELLS IN THE TUSCALOOSA TREND OF SOUTH LOUISIANA

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ABSTRACT

The Tuscaloosa trend of south Louisiana provides many challenges to oil & gas operators. The formations are found below a depth of 16,000 ft. At these depths, temperatures approach 400°F (204°C) and pressure gradients vary from 0.459 psi/ft to 0.96 psi/ft. Production tests have shown the presence of CO₂ and H₂S and have revealed the fact that formation water salinity varies from 11,500 ppm NaCl to 120,000 ppm NaCl. These salinity variations occur both vertically and laterally.

The combination of depth, high temperature and varying pressure gradients along with the presence of CO₂ and H₂S has complicated drilling, usually resulting in the use of oil base mud below a depth of about 16,000 ft. The logging tools used to evaluate these formations must operate in this same hostile environment. Various combinations of tools applicable to Tuscaloosa evaluation will be discussed, along with their limitations. Also, the difficulties in calculation of formation water salinity from logs run in oil base mud are discussed.

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