

The Tuscaloosa Marine Shale: *An Emerging Shale Play*

Kirk A. Barrell¹

¹President, Amelia Resources L.L.C.

Abstract

The Tuscaloosa Marine Shale (TMS), a source rock, occurs above the prolific deep Tuscaloosa sands and averages 150-200' in thickness. The shale is uppermost Cenomanian to early Turonian in age (92-94 million years ago) and was deposited during a major transgression during the Tuscaloosa "A" Sequence. The boundaries of the TMS play are yet to be defined, but 7.4 million acres (11,500 square miles) could eventually be prospective. Structurally, the TMS exhibits monoclinal dip from Mississippi down into Louisiana. Drilling new wells and performing additional analyses will lead to the definition of the play boundaries and "sweet spots" where economics will define the full development of the shale.

Alfred C. Moore, a Mississippi wildcatter & geophysical engineer, worked up the first regional project targeting the Tuscaloosa Marine Shale (TMS), beginning in 1969. A former Sun Oil geophysical engineer, Moore sold it to colleagues at Sun Oil in 1970 for \$25,000. In 1971, Sun drilled a well in Pike County, Mississippi in which they cored 310' of the TMS. The well was plugged as non-commercial after perforating twenty-four feet of the TMS. During the next four decades, several operators including Callon, UPRC, Worldwide Companies, Petroquest, and Encore would make attempts to prove the economics of this unconventional reservoir.

In 2010, Devon Energy commenced a large lease acquisition effort across the TMS play. Encana followed, along with Goodrich Petroleum, EOG Resources, Indigo Minerals, Justiss Oil, and Halcon Resources. To date, over two million acres have been leased. Devon and Encana have led the drilling efforts across the play and thirteen horizontal wells have been completed over the past eighteen months. The most significant completion to date has been Encana's Anderson 18H #1 well with a thirty day initial potential of 1094 barrels of oil equivalent per day. EOG's Dupuy Land Company 20H-1 well was drilled to a measured depth of 16907' in 28 days. The longest lateral of 8932' was achieved also by Encana. None of the recent completions have produced long enough to determine a decline rate, type curve, or recoverable reserves. Twenty three wells are currently in the permitted or planning stages. Active operators are Encana, Devon, Goodrich, EOG, and Halcon.

At this early stage in the play, economics are not confirmed. It is believed, that once the play is fully de-risked and in development mode, costs will range from \$9-12 million per well. Without known initial producing volumes and decline rates, it's currently impossible to determine the economic viability of the play. Accurate prediction of estimated ultimate recoveries will occur after approximately 10-20m wells have produced for over one year and decline rates, hydrocarbon mix, and pressures are confirmed. Once this is established, meaningful economic scenarios and type curves can be generated.