

Exploring the Missing Blind Zone on the GoM Shelf

Selim Simon Shaker¹

¹Geopressure Analysis Service (G.A.S.), Houston, TX

ABSTRACT

While onshore unconventional resources capture the head-lines of supporters and rejectionists, an underexplored zone of low risk potential resources, on the shelf of GOM should be considered as another optimum choice. The abundance of geological, geophysical, engineering and infrastructure data and facilities on the shelf can make this missing zone a high exploration potential.

Historically, finding hydrocarbon started early by mapping structures via well correlations. In the last five decades, seismic mapping including attributes such as bright spots, DHI, AVO etc. became the tools for assessing potential prospects. However, seismic represents the response of the acoustic waves to the subsurface litho-hydrogeology and occasionally to the hydrocarbon fluid contents. At the geopressure transition zone, shale and sand velocities cross over, and reflectivity becomes very weak and cannot be recognized on the seismic stacking velocity (PSTM) lines (i.e. blind spot). However, this zone represents over 50% of the early offshore shelf discoveries from 1950's and beyond.

Non-seismic method of assessing, delineating and mapping this zone is introduced in this paper. The concept of integrating the regional maximum flooding surfaces (MFS) and the top of geopressure (TOG) in a mapable fairways fashion is the foundation of this technique. The "Strat-Geopressure Fairway" represents the spatial belt surrounding the interception's contours where stratigraphic top (MFS) and TOG are met. Incorporating the established producing horizons (from the offset wells) to these fairways provides an essential fast track tool for pre-drilling appraisal of a play concept, lead and prospect. Moreover, it identifies the underexplored leads and untapped exploration targets. It also delineates the drilled bypass pay zones and potential reservoirs and sheds light on areas of potential deeper exploration and exploitation of secondary targets. Furthermore, it defines casing and mud-weight programs for further drilling on the offset structural segments on any potential prospect.

This method can be applied worldwide in any mature clastic basin.