Post Well Analysis of Gulf of Mexico: a multidisciplinary approach for a more confident understanding of this complex petroleum system

David Little[1], Edward Smith[1], Brad Torry[1], and Jason Kegel[1]

[1]TGS

Abstract

A multidisciplinary study of 100 wells from the US offshore Gulf of Mexico has been carried out in order to assess, for each formation in each well, the four key risk factors for exploration: reservoir, trap, seal, and charge. The criteria for well selection comprise location in key areas of exploration, depth, well stratigraphy and availability of data. Both dry and discovery wells have been analyzed, for a more complete spectrum of the exploration scenarios that characterize this region.

This multidisciplinary approach, that includes the integration of well data (including geological reports, well logs, mud logs, biostratigraphic reports), 2D and 3D seismic, petrophysical data (including CPIs), thermal modelling and public data, provides a unique systematic assessment of the petroleum systems of the US offshore Gulf of Mexico which will be carried forward to the Mexican offshore upon release of available data.

Vertical complexity and heterogeneity of the Tertiary successions makes it difficult to identify Formations and sequences based solely on lithological and wireline data. The integration of the biostratigraphic datasets has been fundamental to identify and characterize sequences and lithological units.

By collating the results of this study in a Microsoft Access Database that can be browsed and investigated in ArcGIS, new trends and patterns in the data can be explored.