

New Insight into Gulf of Mexico Well Success

Post-well analysis proves itself to be a valuable risk-assessment tool

Contributed by TGS

By analyzing the reasons for success and failure of a given well, we can learn more about the hydrocarbon system in which the well was drilled and improve the chances of success in the future. TGS has reviewed historical well/drilling activity in the U.S. Gulf of Mexico to identify 100 “key exploratory, discovery, and stratigraphic wells.” The analysis of well log data, paleo data, well reports, production data, and 3D seismic data is combined to give a comprehensive overview.

To assess the four key risk factors for exploration — reservoir, trap, seal, and charge (consisting of both source and migration) — an interdisciplinary approach is required. Both dry and discovery wells have been analyzed in an attempt to provide an appraisal of the explo-

ration scenarios that characterize this region. Upon completion of the analysis of the four main geologic parameters, a well summary chart is created to graphically represent if the well is a success or a failure at each stratigraphic interval.

Pie segments are representative of the overall rating that is applied for each reservoir interval. This example well, (Figure 1) M696_2_Chevron_60817410340000 (Blind Faith), identified two successful intervals with the four primary pie segments displaying high values. Hydrocarbons have migrated updip via faults to charge the reservoirs at LM2 R1 and MM R5 level that have good structural trap and effective closure. Upper intervals generally are found to have effective reservoir and seal but failed because of

lack of closure and charge/migration pathways. The final project is delivered in an ArcGIS geodatabase format so that each well can be scrutinized. Attachments of seismic and well images are provided for each well in the database, and a query tool allows the user to further interrogate individual elements of the wells (Figure 2).

Hydrocarbon exploration is a high-risk investment, and thorough risk assessment is essential for successful asset management. Exploration is a complex concept, and, using the post well analysis, we have provided an independent confidence rating on the four main geologic elements that are required for a successful outlook on wells that have been completed.

For more information, visit TGS at booth 2435. ■

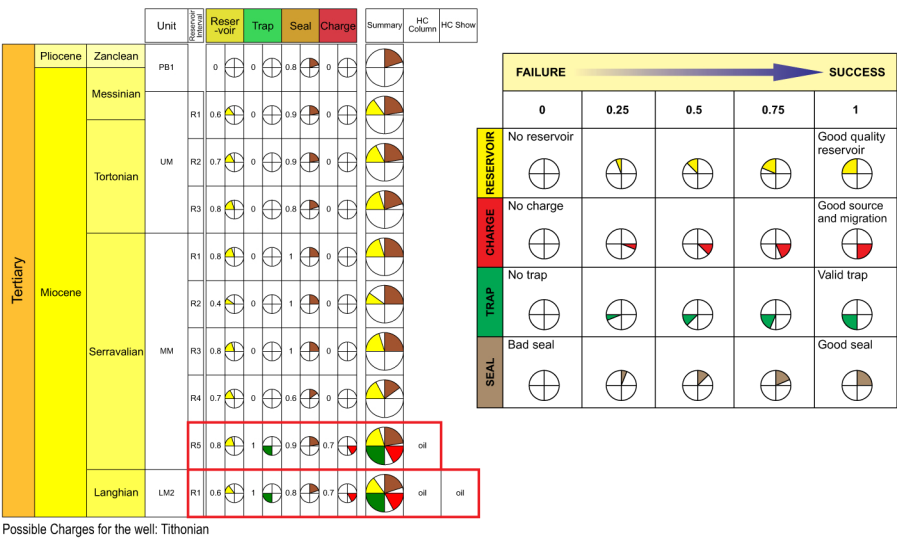


Figure 1: Post-well-analysis summary chart for M696_2_Chevron_60817410340000 (Blind Faith).

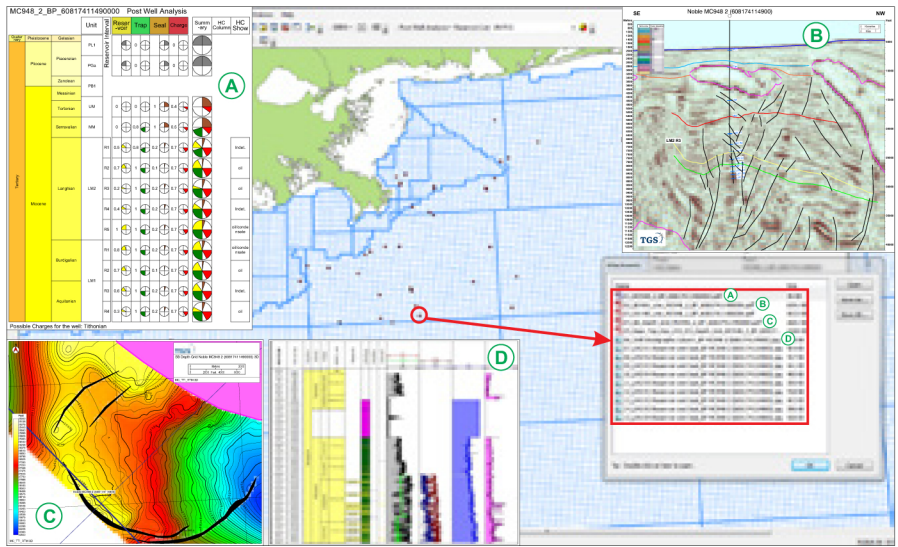


Figure 2: Screen shot of post-well-analysis GIS project. Links to interpreted seismic and well data are shown for an example well.