[PS]Well Log Correlation of the Wilcox Group of San Jacinto County, Texas*

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Search and Discovery Article #50798 (2013)**
Posted June 21, 2013

*Adapted from poster presentation given at AAPG Southwest Section meeting in Fredericksburg, Texas, April 6-8, 2013
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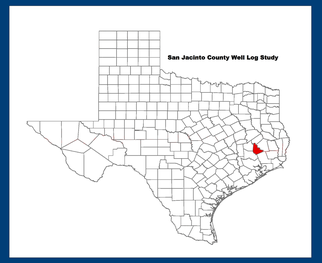
Abstract

Well log correlation throughout San Jacinto County reveals details of Wilcox Group deltaic sandstones within the Cold Spring Field. In this region, hydrocarbons are trapped in rollover anticlines along the Wilcox growth-fault zone (Guevara and Grigsby, 1992). Reservoirs are Paleocene to lower Eocene Wilcox Group distributary-channel, channel-mouth-bar, and delta front sandstone facies (Guevara and Grigsby 1992). From 1993 - 2011 the Cold Spring Field produced 33.5 BCF of gas and over 1.7 million barrels of condensate (http://webapps.rrc.state.tx.us/PDQ/generalReportAction.do). The study area is geographically located in San Jacinto County and stretches from Maynard in the west to Coldspring and Shepherd in the east. Gamma ray, SP, and neutron density logs were utilized to construct NE-SW and NW-SE structural cross-sections. Correlations show west-dipping Yegua and Wilcox horizons. Future work will include constructing structure maps, isopach maps, net sand maps, and additional cross sections to delineate structures and to test and refine depositional models.



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Abstract

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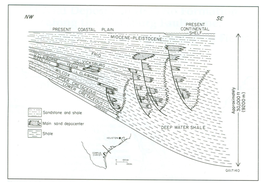
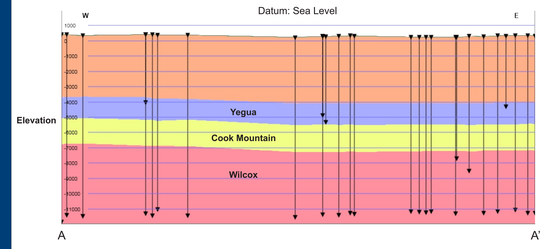
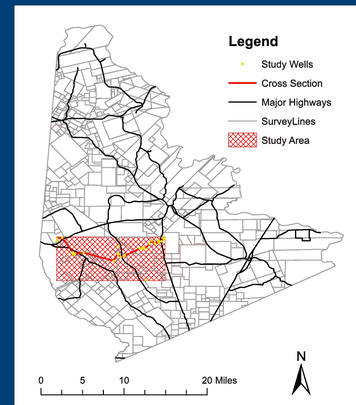


Schematic depositional dip-oriented cross section through the central Texas Gulf Coast Basin, Illustrating the relative position of major sand depocenters (after Bebout and others, 1982)

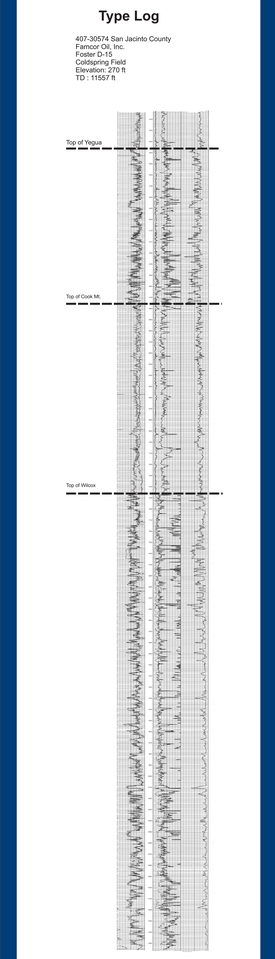
Structural Cross Section A - A'



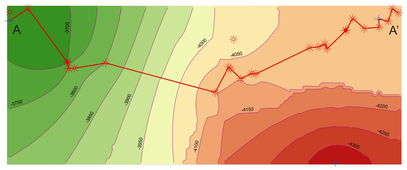
Structural cross section of study area built utilizing ArcGIS linear raster krigging and Section Sketch 3D modeling.



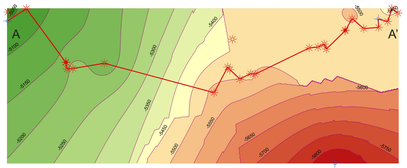
Type Log



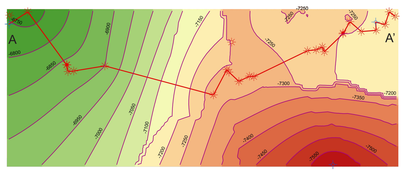
Top of Yegua Structure Map



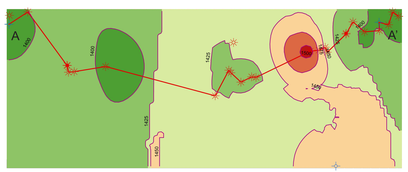
Top of Cook Mountain Structure Map



Top of Wilcox Structure Map



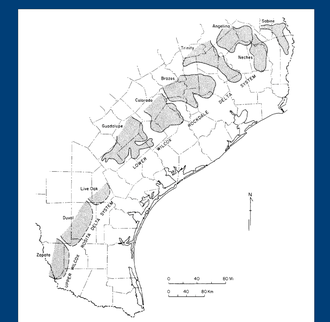
Yegua Isopach Map



Cross sections and isopach map built utilizing ArcGIS linear raster Krigging models.

Conclusions

- Well Log data indicates the structural style of Cook Mountain, Yegua, and Wilcox formations to be characterized by southeast dip.
- Published maps of nearby Mercy Field show similarly dipping beds (Mellors, 1962).
- The Wilcox sand within the study area is not a uniform sand, but is interspersed with shale which can not be traced from well to well.
- Within the study area there is no evidence of sealed sections of Wilcox sands.
- ESRI ArcGIS was employed to interpolate ordinary-linear raster kriging models of the Cook Mountain, Yegua, and Wilcox formations.
- FrOG Tech Section Sketch was utilized to build a dynamic structural cross section of the study area.
- The limited data set of the study area reveals limitations of software with regard to application.



Location of lower Wilcox Rockdale deltas, including Trinity (modified from Edwards, 1981)

References

Guevara, E. H., and Grigsby, J. D., 1992, Core and Log Analysis of Depositional Systems and Reservoir Properties of Gulf Coast Natural Gas Reservoirs: The University of Texas at Austin, Bureau of Economic Geology, 45 p.

Fisher, W. L., and McGowen, J. H., 1967, Depositional Systems in the Wilcox Group of Texas and Their Relationship to Occurrence of Oil and Gas: Gulf Coast Associations of Geologic Societies Transactions, v. 17.

Mellors, B. J.,1962, Mercy and West Mercy Field, *in* Typical Oil and Gas Fields of Southeast Texas: Houston Geological Society, p. 120-124.