Subsalt Plays in the Deepwater Gulf of Mexico Basin

Tianguang Xu, Justin Devery, Angelina Belyayevskaya, Casey Langdon, and David McCaleb

IHS Markit, 1401 Enclave Pkwy., Houston Texas 77077

GCAGS Explore & Discover Article #00291*
http://www.gcags.org/exploreanddiscover/2017/00291_xu_et_al.pdf
Posted October 30, 2017.

*Article based on an abstract published in the *GCAGS Transactions* (see footnote reference below), which is available as part of the entire 2017 *GCAGS Transactions* volume via the GCAGS Bookstore at the Bureau of Economic Geology (www.beg.utexas.edu) or as an individual document via AAPG Datapages, Inc. (www.datapages.com), and delivered as a poster presentation at the 67th Annual GCAGS Convention and 64th Annual GCSSEPM Meeting in San Antonio, Texas, November 1–3, 2017.

ABSTRACT

In the Deepwater Gulf of Mexico (DWGoM), salt plays a critical role in hydrocarbon entrapment. This study analyzes more than 1000 reservoirs in 361 fields in the DWGoM Basin in the context of salt position and reservoir age. The results show that more than 260 reservoirs in 86 fields are located under the salt canopy, containing about 52% recoverable reserves in the entire DWGoM Basin.

The age of these subsalt reservoirs ranges from the Paleocene to Pleistocene. The Upper Paleocene–Lower Eocene Wilcox sands hold the most reserves, followed by the Lower Miocene, Middle Miocene, Upper Miocene, Pliocene, Oligocene, and Pleistocene sands. During the Late Paleocene to Early Eocene, a thick succession of clastic rocks was deposited during the first major Cenozoic influx of sediment into the Gulf of Mexico Basin, and those deposited in the deep-water section was correlated to the Wilcox Group. Subsalt reservoirs in the Wilcox sands consist predominantly of channel-fill and distal lobes facies, containing about 20% recoverable reserves in the entire DWGoM Basin.

Trap types for subsalt reservoirs in the DWGoM Basin consist predominantly of structural and a combination of structural and stratigraphic. Based on reservoir age and trap type, 11 subsalt plays have been classified and analyzed. These subsalt plays contain recoverable reserves about 15 Bboe. The most prolific subsalt plays include the subsalt Paleocene-Eocene Wilcox structural and subsalt Miocene structural plays, which account for 86% of the total subsalt play reserves. The subsalt Wilcox structural play is distributed predominantly in the Walker Ridge and Keathley Canyon areas; while the subsalt Miocene structural plays are distributed mainly in the Green Canyon and Mississippi Canyon areas. No subsalt plays have been established by discoveries in the Mexican waters; however, the discovery of the Great White Field in the Alaminos Canyon area along the U.S. border indicates that the subsalt Oligocene and Paleocene-Eocene structural plays very likely extend into the Mexican waters along the Perdido Fold Belt.

Originally published as: Xu, T., J. Devery, A. Belyayevskaya, C. Langdon, and D. McCaleb, 2017, Subsalt plays in the deepwater Gulf of Mexico Basin: Gulf Coast Association of Geological Societies Transactions, v. 67, p. 661.