

Monday, September 13, 2010

Westchase Hilton • 9999 Westheimer
Social Hour 5:30–6:30 p.m.
Dinner 6:30–7:30 p.m.

Cost: \$28 Preregistered members; \$35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.

Pre-registration without payment will not be accepted.

You may still walk up and pay at the door, if extra seats are available.

HGS General Dinner Meeting

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Two Talks Tonight

Revisiting the Subsalt Trap Archetype Classification Scheme After Nine More Years of Gulf of Mexico Subsalt Drilling

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Subsalt exploration in the Gulf of Mexico (GOM) remains an area of intense focus by the oil and gas industry. Finding economic hydrocarbon accumulations beneath the extensive allochthonous salt sheets in the northern GOM basin requires solving a number of geophysical, geological, and drilling challenges. In 2001, we presented a subsalt trap classification which, given seismic imaging challenges associated with complex allochthonous salt, could be used for qualitatively ranking subsalt exploration prospects according to their structural attributes (Hart and Albertin, 2001 GCSSEPM).

This classification is comprised of a collection of subsalt trap archetypes, with each archetype representing an important structural variation carrying specific trap and hydrocarbon charge risks. These archetypes are grouped into four genetic play families, calibrated for overall prospectivity by a statistical analysis of subsalt well results. Our original 2001 analysis used a

calibrating database of 67 subsalt tests; since then, at least 121 new subsalt traps have been tested by industry. We used these new subsalt well data to revisit the classification scheme and answer two basic questions: (1) is the overall trap family ranking corroborated by drilling results of the past nine years, and (2) are any revisions to the classification scheme warranted?

Overall, the subsalt trap family prioritization remains valid. All but three of the 44 subsalt discoveries drilled since 2001 can be attributed to the top-ranked autochthon-rooted trap family. Of the three exceptions, only one discovery could be positively attributed to one of the other subsalt trap families. Analysis of the new drilling results does, however, suggest the following descriptive and statistical updates to the top-tier autochthon-rooted trap family:

1. the cumulative success rate for autochthon-rooted traps,

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- currently at 41%, has been favorably impacted by the emergence of the Paleogene (Wilcox) play trend;
2. the autochthon-rooted trap family has been broadened to include all subsalt traps directly underlain by deep Mesozoic salt, whether in the form of Cretaceous allochthons, crept autochthonous salt on younger basement, or true in-situ autochthonous salt;
 3. the top-tier autochthon-rooted trap family can be usefully subdivided into sub-families which are, in turn, ranked for overall trap and hydrocarbon charge risk;
 4. a large, calibrating database of 188 subsalt prospect tests from across the GOM affirms the new sub-family rankings,
 5. drilling results suggest that the industry will be challenged to maintain its historically high success rate for autochthon-rooted subsalt traps, as exploration focus shifts from simpler traps of the lower slope to more complex traps of the middle and upper slope subsalt trends. ■

Biographical Sketch

BILL HART is a geologist in BP's Deepwater Gulf of Mexico Exploration Business Unit, where he serves as a subsurface advisor specializing in subsalt interpretation and salt tectonics. Upon joining Amoco in 1980, he became an ardent student of salt-sediment dynamics, a natural result of his early assignments exploring and appraising numerous Louisiana salt domes. Since the late 1980s, he has leveraged this experience in the varied Gulf of Mexico subsalt play trends, generating and testing prospect inventories from coastal Louisiana to the deep water protraction areas.



Mr. Hart holds a Master of Science degree in geology from the University of Massachusetts and a Bachelor of Science degree in geology from San Francisco State University. He is an active member of HGS, NOGS, and GCSSEPM.