

Play Concepts in an Emerging Major Hydrocarbon Province in the Ultra-Deep Water Gulf of Mexico

Moore, Michael G. and Delph, Bryan C.

BHP Billiton Petroleum (Americas) Inc., Houston TX

Abstract

A major hydrocarbon province has been opened up in the four corners area of southwestern Atwater Valley, southeastern Green Canyon, northeast Walker Ridge and northwest Lund in the ultra-deep water Gulf of Mexico. Since 1995, 14 hydrocarbon accumulations have been discovered with a reserve potential of more than two billion barrels. Two major plays exist in the trend; a Middle and Lower Miocene submarine fan sand reservoir play and a pre-Miocene distal submarine fan sand reservoir play.

The first play type is Middle and Lower Miocene age amalgamated and layered sheet sands deposited by submarine fan systems. The two main trap types are large, salt-cored faulted compressional anticlines and faulted 3-way closures against salt. There are currently nine discoveries in this play type.

The second play type consists of pre-Miocene age distal submarine fan sheet sands deposited on the abyssal plain and trapped on salt pillow structures. This play type has yielded five discoveries in this area.

Both plays are sourced by hydrocarbon generated from Upper Jurassic to Lower Cretaceous carbonates and marls. Significant hydrocarbon accumulations are still being discovered in this prolific frontier province as improved seismic imaging allows exploration under the shallow Sigsbee salt canopy.