

## **Distribution and Development of Encased Secondary Minibasins in the Central Deepwater Gulf of Mexico**

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### **Abstract**

Advances over the last several years in seismic acquisition (wide azimuth, full azimuth, and long offset) and processing (reverse time migration and full waveform inversion) have led to increased recognition of encased secondary minibasins in the central Deepwater Gulf of Mexico. An understanding of the spatial and temporal distribution and development of encased minibasins expands our regional understanding of salt tectonics and salt-sediment dynamics, and may provide new exploration targets. Encased basins form when allochthonous salt flows completely over the top of the minibasin during times of low deposition relative to the adjacent salt inflation. Two types of encased basins are recognized: (1) Basins in which encasement occurs before welding at the base or sides of the basin; these basins appear to have subsided or capsized within an inflating salt canopy, with some subsiding into an open diapir or having a younger basin stacked on top, and (2) Basins in which encasement occurs close to the time of welding at the base or sides of the basin; these basins do not appear to have capsized or subsided significantly into the salt and were instead encased by salt evacuating from beneath neighboring subsiding basins. Secondary basins deposited during the Miocene in the central Gulf of Mexico were prone to encasement in the Early Pliocene. Basins encased in the Pleistocene are observed, but appear to be less common. Wells penetrating encased basin section in the central Gulf of Mexico have encountered a variety of scenarios such as various lithologies, ages and dips. Many of these wells were drilled prior to imaging advances and were thus poorly positioned relative to prospective closures. The recognition of the presence and widespread distribution of encased basins has enhanced depth imaging of adjacent primary section exploration targets by incorporating the properties of the encased basin section into velocity models.