AAPG Annual Meeting
March 10-13, 2002
Houston, Texas

Jeffrey J. Dravis[1], Harold R. Wanless[2] (1) Dravis Geological Services, Houston, TX (2) University of Miami, Miami, FL

Influence of Physiographic Setting on Facies Patterns: Applications to the Development of Isolated Platform Reservoirs Like Kashagan in the Caspian Sea

Geological modeling and development drilling of larger isolated carbonate platform reservoirs, like Kashagan in the Caspian Sea, can be guided by facies relationships observed in Quaternary sequences of the Bahamas Platform Complex. Some Upper Paleozoic reservoirs approach the scale of smaller Bahamian platforms, like Caicos Platform. By relating paleoclimatic setting to limited well data, one can enhance prediction of general facies distribution, reef and sand body geometries, and preferred shedding directions of carbonate sands off these platforms.

Climate changes dramatically from the northern Bahamas (gentle easterly winds) to the southern Bahamas (Caicos Platform -- strong easterly trade winds) over a few degrees. In the northern Bahamas, reefs or oolitic sands are largely confined as narrow belts along platform margins, have mud-dominated platform interiors, and leeward margins have onlapping wedges of displaced micritic sediments. Evaporites are absent. Reservoir potential is highest along platform margins.

Windier platforms (such as Caicos Platform), in contrast, exhibit widespread oolitic sand production and accumulation throughout the platform, with sand bodies assuming wind-parallel or wind-perpendicular orientations depending on preexisting topography and water depth. Platform interiors are grainstone-dominated (oolitic), and reef complexes can flourish across much of the platform interior. Reefs and oolitic sands coexist because of wind-wave agitation. Reservoir potential exists over much of the platform. Grainstones are shed off leeward margins and may be potential reservoirs. Evaporites can occur throughout the platform interior.

Several reservoir analogs easily fit within the dimensions of Caicos Platform, providing a scale perspective for development of larger Caspian Sea reservoirs.