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Atlantic Basin Deep Water Play

Most of the oil discovered in deep water is around the margins of the greater Atlantic Basin, including the Gulf of Mexico, Brazil and West Africa. Four critical factors are common in these prolific hydrocarbon systems; 1) mature Cretaceous to Lower Tertiary source, 2) excellent reservoir sandstone from a major drainage or paleo-drainage, 3) structure from produced from salt, shale or inversion and 4) seismic definition of reservoir fluids.

Since most of the world's open oceans have good circulation, anoxic conditions needed for preservation of organic material is rare in deep water. Good source rocks can be formed in protected or embayed areas which allow restriction of circulation, upwelling of nutrient rich waters that produce local anoxic conditions, or in lacustrine environments that have latter subsided into deeper water. The Upper Cretaceous anoxic event is the exception where rich source rocks were deposited over the entire central Atlantic.

A major drainage system or paleo-drainage is required to provide enough overburden for maturation of the source and to provide good quality reservoirs. Structure in the deep water play can be provided by salt or shale mobile substrates of or inversion related to strike slip reactivation along transform faults.

The ideal structures are growing contemporaneous with deposition where ponded reservoir sandstones are later inverted into the highest trapping position. Slow velocity, under compacted deep water sediments may provide significant leverage for seismic definition of reservoirs, fluid types and oil/water contacts defined by flat events and down dip conformance of amplitude and structure.