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Play opportunities for the eastern Gulf of Mexico

The eastern part of the central Gulf Outer Continental Shelf (OCS) and the eastern Gulf OCS regions present one of the most attractive exploration opportunities currently and soon to be available in the Gulf of Mexico. Recent industry activity in eastern Mississippi Canyon, Main Pass, Viosca Knoll, and Mobile offshore areas have successfully identified significant hydrocarbon accumulations in the eastern part of the central Gulf OCS. There is also a large amount of industry interest in the eastern Gulf OCS region. The current focal point in the eastern Gulf OCS comprises the areas to be offered in the planned Sale 181 area December 2001. They are located in the westernmost extents of Destin Dome, Desoto Canyon, and Lloyd areas.

Tracts in the eastern Gulf planning area are underexplored relative to the traditional exploration areas of the western and central Gulf. Fewer scheduled lease sales, a more diverse geology and absence of producing infrastructure are among the factors that have led to sporadic development. Only eight previous lease offerings have been made in the eastern Gulf OCS region. The last federal lease sale (Sale 116) occurred in 1988 and only 114 tracts were awarded. The low density of leases in the region is in itself attractive to an industry always in search of new opportunities.

In preparation for upcoming lease sales, analyses of newly acquired 2D and 3D seismic data tied to existing well control provide a look at some interesting play opportunities. Approximately 23,000 miles of new 2D seismic has been acquired for evaluation of these tracts along with 450 blocks of new 3D seismic. These new data, when combined with the relatively sparse drilling record, prescribe both old and new play opportunities for these areas.

Three types of plays in the eastern Mississippi Fan and Florida carbonate shelf may be discerned allochthonous salt-related features, autochthonous salt-related features, and Mesozoic shelf

carbonate plays. Allochthonous salt-related plays are largely of Early Pliocene or Middle to Late Miocene age and occur in proximity to and beneath horizontal salt features largely restricted to the upper Mississippi fan. Good examples of discoveries associated with the allochthonous salt are Mississippi Canyon blocks 211, 292 and 778, each structurally positioned beneath a salt sill. Additional undrilled opportunities remain in this play but often require high-effort seismic acquisition and processing to be delineated sufficiently for an exploration test.

Middle to Late Miocene plays are associated with autochthonous features in the middle to outer fan. Examples of discoveries associated with the autochthonous salt are in Mississippi Canyon blocks 84, 305, and 657 and Viosca Knoll 915. This play is characterized by channel levee and fan deposits in lower Pliocene to Middle Miocene slope fans. Often features are developed above or adjacent to salt deformation features and associated faulting, some having been subjected to post-depositional basin inversion caused by salt movement and withdrawal.

The deep, Cretaceous section also represents a play in this part of the fan, pending confirmation of a reservoir section. Recent activity along the buried Cretaceous shelf margin has turned up a significant play with several sizable gas discoveries reported from grain shoal carbonate reservoirs in Viosca Knoll and Mobile areas. A Cretaceous shelf section produces gas from the Aptian James and possibly the Albian Andrew formations, which may extend into the west Florida shelf areas. Examples of discoveries along this trend are in Viosca Knoll 252, 114, 68 and Mobile 991. Evaluation of multiple seismic attributes has proven useful for identification of porous zones along this trend.

Additional opportunities occur in the down-dip Jurassic age Norphlet beneath the shelf. A discovery at Destin Dome 56, as well as prior discoveries in Mobile Bay, have drawn appreciable →

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interest to the trend. Precise evaluation and ranking of opportunities in these new plays will be highly dependent on detailed evaluations of the high-quality seismic data and understanding of the stratigraphic and sedimentologic framework within these regions.

Basin equivalents of the Mesozoic section have yet to be tested with reservoir being the main concern. This section sources much of the petroleum for the shallower section in the region and may still contain appreciable trapped reserves. Development of significant structural trapping opportunities resulting from an abundance of salt structures is observed in the deepwater Mesozoic section.

Biographical sketches



John Adamick received a B.S. degree in geology from Texas A&M University in 1983 and an M.S. degree in geology from Stephen F. Austin State University in 1987. In 1995, he attended Harvard University and completed the Program for Management Development. John began his career with TGS Geophysical Company in 1986 and has served the company in numerous capacities. He is currently president of

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