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Regional Offshore Interaction of Sediment and Salt, Gulf of Mexico

By James F. Fox, Phillips Petroleum Company

The Gulf of Mexico is a dynamic basin dominated by prograding sediment wedges and strong salt tectonics. These two powerful geological forces have combined to form one of the most complex and hydrocarbon-rich basins in the world. As geoscientists, we are asked to make sense of this complex system, and continue to find economically attractive well locations. The enormity of the database makes the nature of our work different from exploring in a virgin basin. Integrating all we know and applying it to new areas require a set of rules on how sediment and salt interact. These rules are what allows some companies to achieve impressive successes in the technically demanding deep-water and subsalt trends.

The basin separates into depotroughs that collect the sediment, and each of these depotroughs is controlled by the balance between subsidence, progradation, salt movement, fault movement, and other factors. By examining the spatial relationships between different depotrough types and their main structural controls, it is possible to reconstruct the historical interaction between different dominant salt styles and episodes of deposition. From this observation, we can surmise that dominant structural styles varied through the Tertiary in

the Gulf of Mexico, and this variation is probably related to the changes in relative sea level and the rate of sedimentation and subsidence. If we can establish rules for these relationships, a powerful model can be built that can be used in prospecting for future hydrocarbon fields in this province. ■



James F. Fox is the Subsalt Exploration Director for Phillips Petroleum Company in Houston. In this capacity, he determines the strategic direction and

oversees the technical work of a group of geoscientists pursuing the subsalt play offshore Louisiana. Previous to this position, Mr. Fox served as the Geoscience Director for Worldwide Exploration. He has worked for Phillips for 17 years, working in Latin America, the UK, and North America exploration and development groups.

Mr. Fox teaches a continuing education seminar for AAPG called "Interaction Between Sedimentation and Salt Tectonics," presenting the topic to more than five hundred geoscientists during the last three years. In addition, he has presented numerous talks on the subsalt play at the OTC, professional conventions, investment meetings, and the United States Congress.