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by Kurt W. Rudolph
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Current Exploration Trends—Prudent Investments or Irrational Exuberance?

Recent petroleum commodity prices and supply concerns have spawned discussions by industry analysts, the media, policy makers and the public. Beyond the hype of “peak oil,” the petroleum industry is faced with very real challenges in maintaining a healthy exploration program to meet long-term energy needs. Using recent examples from North America, West Africa, South America and the Middle East, this presentation looks at several recent trends in the exploration landscape.

First, a ferocious competitive climate is driving up the cost of opportunity capture, creating the risk of a “winner’s curse” scenario. This situation is providing incentives to pursue high-risk/high-potential plays, often in remote or challenged settings. Exploration in these frontier areas is being enabled by both a return to fundamentals and the next generation of basin concepts and modeling capabilities. At the other end of the spectrum, near-field potential is often a “hidden jewel,” with payoffs from extensions to existing pools and discovery of new reservoirs. Significant new potential in these settings is usually driven by new data, technology or concepts that refute an existing paradigm. In basins that are prolific but mature, deeper and more subtle opportunities are being pursued. Often these plays rely on new petroleum systems and/or the preservation of deep porosity. And last, unconventional resources, including ultra-tight gas, heavy oil, shale gas and coal bed methane, have become more prominent, especially in North

America. Such assets have specific characteristics that demand a different approach. Unconventional resources commonly have long lifecycles, blur the boundaries of exploration/development/production, need continuous experimentation to optimally exploit and require a close integration of geoscience and engineering.

Because the business and technical aspects are becoming increasingly complex for the upstream energy industry, uncertainty management is becoming an important topic. The current environment can translate to an opportunity for those organizations that can respond strategically rather than react to volatile near-term conditions. ■

Biographical Sketch

KURT RUDOLPH received a BS in geology from Rensselaer Polytechnic Institute and an MA in geology from the University of Texas. He began his career as an Exploration Geologist with Unocal in 1978 before joining Exxon in 1981. He has held a variety of positions in Exxon, and now ExxonMobil, including Research Geologist, Chief Interpreter in Kuala Lumpur, Technical Advisor for Africa and Middle East Region, Hydrocarbon Systems Resource Manager and culminating with his current position as Chief Geoscientist with ExxonMobil Exploration Company in Houston.



Mr. Rudolph has published over 40 papers and abstracts on seismic interpretation, stratigraphy and basin analysis. Examples include papers on carbonate platform evolution, seismic modeling of reefs, DHI analysis, fluvial reservoir architecture, outcrop-based seismic modeling, structural inversion, the effects of tectonics on sequence stratigraphy, uncertainty analysis and geoscience technology trends.

He won the Wallace Pratt Award for the best *AAPG Bulletin* paper for 1992, was an AAPG-SEG Distinguished Lecturer for 2001–2002 and the 2007 AAPG Michael Halbouty Lecturer. This talk is his Halbouty Lecture.

