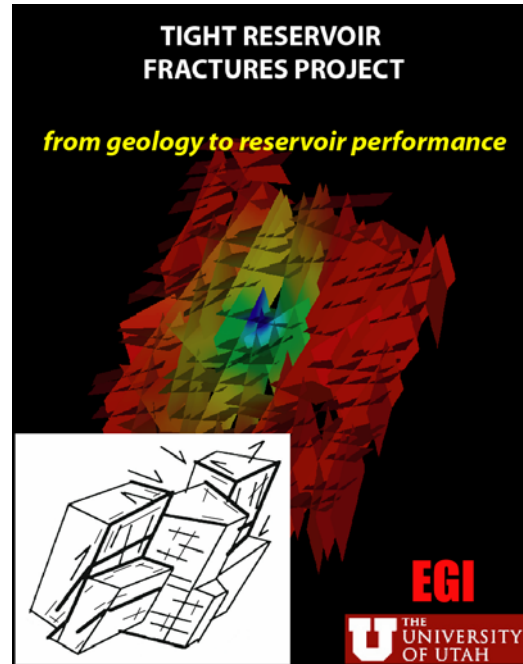


Tight Reservoir Fractures: Geological Characterization and Reservoir Performance

Among the unconventional hydrocarbon resources, natural gas in tight (low-matrix permeability) sandstone and shale reservoirs are the most promising and feasible resources for exploration and production. Fractures provide the crucial permeability to exploit these tight reservoirs and identifying sweetspots developed by the population and connectivity of fractures is a fundamental step in developing tight gas fields. This project addresses these issues and aims to (1) construct a comprehensive database on the sedimentologic and structural characteristics of tight (sandstone and shale) reservoir units of North America (Paleozoic, Mesozoic and Cenozoic); (2) to design numerical (computer) models on specific geologic and petrophysical parameters that control the performance of tight reservoirs, and (3) to conduct selected fracture mapping at various scales (satellite images through outcrop reservoir scale and core samples to microfractures) to understand the occurrence and behavior of optimum fracture networks and the impact of structural deformation (faulting and folding) in low-permeability sand and shale rocks. The project includes both low-permeability sandstone and shale reservoirs because these two rock types often occur together in the same basin, and we want to tap this opportunity to investigate the similarities and differences between these two types of tight reservoirs. Despite decades of fracture studies, predictable understanding of fractures still poses a formidable challenge in developing tight reservoirs. By synthesizing a knowledge-base of (1) fractures, (2) geologic characteristics of reservoirs, and (3) production performance of reservoirs, this project aims to facilitate the application of fracture and reservoir knowledge to exploration and production of tight sand and shale reservoirs. The project involves M.S. and Ph.D. student work as well.



To be launched in 2008

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Cost per sponsoring company: ~US \$58,000