Unconventional Reservoirs Workshop

Organized by

Carl H. Sondergeld

Associate Dean and Professor
Mewbourne College of earth and Energy
Mewbourne School of Petroleum and Geological Engineering
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Unconventional reservoirs are becoming increasingly important in the National energy budget for two principal reasons: 1) they contain gas, an environmentally preferred fuel, and 2) conventional resources are on a decline. The largest gas reservoir in the US is a gas shale. A few years ago, shales were seals and more commonly considered problematic. They now are the focus of intense drilling and exploitation. Tight gas sands gained attention when economic incentives helped defray technological costs to economically produce these reservoirs. Both types of unconventional reservoirs exist in Oklahoma. The objective of this workshop was to share knowledge gained in shale and tight gas sands. The wide spectrum of topics included petrophysical, rock physics, and organic maturity studies, economic evaluation, seismic analysis, NMR log interpretation, perforation design, hydraulic fracturing practice and shale classification schemes. The spectrum of topics provided something for everyone. Presentations were given by scientists from both the industry and academics. Prof. Chandra Rai (University of Oklahoma) shared detailed petrophysical analyses made on gas shales, describing new techniques to measure porosity. Prof. Kurt Marfurt (University of Oklahoma) discussed seismic attributes and then focused on those which seem to correlate with sweet spots in production. Mr. John Ely enthusiastically described the success of hydraulic fracturing programs which used slick water. Dr. Ian Watson described challenges and ignorance in designing perf in shales. Mr. Brian Cardott (Oklahoma Geological Survey) gave a detailed overview of the variation in vitrinite reflectivity (kerogen maturity index) throughout the Woodford shale. Dr. Richard Merkel (Newfield) shared his experience in applying NMR logs to understand clay bound water and porosity in tight sands and gas shales. Mr. Kent Newsham (Apache) described a process for full cycle evaluation of a tight sand reservoir, the Granite Wash. Dr. Tad Smith (ConocoPhillips) convincingly demonstrated the importance of cracks in the analysis of log and seismics in tight sands. Dr. Frank Walles (Devon) presented a framework for potential performance classification of gas shales.

This workshop was sponsored jointly by the Oklahoma Geological Society (OGS) and Science Applications International Corporation (SAIC). Ms. Michelle Summers along with Ms. Sue Crites, Tammie Creel, Laurie Lollis, Richard Murray, Paul Smith and Jane Weber organized this workshop and are responsible for making it run so smoothly. Over 260 participants attended this one day workshop.