AAPG Workshop Suggests Ways To Profit From Mature Fields

It has been interesting to watch the oil and gas industry over the past few months. With oil prices bouncing around $50 a barrel, we are beginning to hear stories about rigs on the move and increased activity in the lower-48 states. In many cases, independent operators are responsible for this increase in activity, and the movement has many people looking at new opportunities, new techniques, and new technology.

I participated in an American Association of Petroleum Geologists technology workshop titled, “Making Money in Mature Fields.” Workshop organizers intended the two-day event to review a variety of mature fields in order to identify the amount and type of oil that could be recovered in these fields while looking at different strategies to economically produce remaining reserves. The event, which was held in Houston, also looked at improved technologies designed to help revitalize reservoirs, and address low pressure, paraffin and corrosion, to name a few.

Day one started off right with a great presentation from a small independent operator. Steven Tedesco from Running Foxes Petroleum Inc. set up the presentations that followed by discussing what it was like to be an independent. He discussed the challenges independents have faced in the past 30 years. Advances in computer technology and the Internet have changed dramatically how small operators work.

Additionally, Tedesco highlighted how the emergence of the shale industry had changed the domestic industry’s focus away from onshore, conventional reservoirs, and had made significant changes in access to capital. He noted that increased access to 3-D seismic technology had helped independent operators increase their potential for success by helping to locate remaining potential in mature reservoirs.

Tedesco discussed independent operators’ continuing struggles with regulations, which increase costs and make it difficult for small companies to be profitable. Many independents work in mature areas where many wells are at the end of their lives. Tedesco says margins are slim, but money can be made as long as small operators are willing to adapt to a continuously changing environment.

In another talk, Jeff Harwell from the University of Oklahoma discussed the use of surfactants to revitalize wells. Harwell highlighted how the next generation of surfactants could be used to enhance production from existing waterfloods without requiring a polymer drive or the expense of water treatment. According to field tests, this process shows effectiveness at total dissolved solids as high as 25 percent by weight and in permeabilities as low as 20 millidarcies.

One of the more unique presentations that day was from Matt Uddenberg and Laura Nozfizer from AltaRock Services. AltaRock began with the assertion that many initial stimulation treatments of long horizontal wells were only partially successful, with fewer than half the perforations contributing to production. AltaRock suggests that if they can plug the high-perm zones at the beginning of a restimulation project, operators can achieve larger production rates than those of the initial stimulation at a fraction of the cost of a new well.

AltaRock has developed a suite of thermally degradable diverters than can be customized to each well’s unique completion, temperature and geology. According to the presentation, data show that the diverters operate over the entire temperature range from 90 to 600 degrees Fahrenheit. The diverters were developed initially for recovering geothermal resources, and researchers realized the potential for oil and gas operations. AltaRock says the diverters are available in a variety of particle size distributions as well as any shape, including beads, particulates, and fibers in order to provide near-wellbore and far-field diversion over a wide range of fracture aperture sizes.

Finally, in a presentation titled, “Helium: Geology of Accumulations and Relationship to other Gases in the Reservoir,” Ron Broadhead from the New Mexico Bureau of Geology discussed the potential opportunities around producing helium. He noted that while it was the most abundant element in the universe, helium actually was relatively rare on Earth.

Broadhead reviewed the unique properties of helium that make it useful. Specifically, helium is chemically inert except under the most extreme conditions, making it an excellent ingredient for magnets in magnetic resonance imaging instruments, as an inert atmosphere for welding, and in manufacturing computer chips and fiber-optic coolants, many of which are key to our modern lives. Because helium is formed from the radiogenic decay of crustal rocks—especially granite—if found, it can be a great source of revenue in old fields.

These were but a few of the presentations covered in Houston, and from the number of folks in the room, it is clear that operators, service companies and investment firms all are evaluating technology as oil prices try to stabilize and operations move forward.

Jeremy Viscomo is the director of technology transfer for the University of Kansas Tertiary Oil Recovery Program and the PTTC Midcontinent Region office. He has more than a decade of experience in developing and organizing technical conferences and special events.