Tight Oil Begins To Have An Impact On IOR Conference

The Mid-Continent Section of the Society of Petroleum Engineers was to host its 20th Improved Oil Recovery Conference, April 9-13 in Tulsa. The biennial event has been showcasing improved and enhanced oil recovery technology for 40 years, and since 1978 has boasted the world’s largest gathering of individuals interested in the subject. The theme of this year’s event is “New Challenges, New Solutions,” highlighting the industry’s response to challenges spawned in part from developing successful IOR technology.

Over the years, the Improved Oil Recovery Conference has been focused largely on what many would call traditional approaches to secondary and tertiary oil recovery. According to IOR organizers, for the most part, these traditional approaches will remain the focus in 2016, however, the addition of improved and enhanced oil recovery in unconventional reservoirs has emerged as an important topic since its introduction to the event in 2012.

According to Michael Wiggins, chairman of the 2016 SPE IOR Committee, improved oil recovery has undergone a huge shift with advances in horizontal drilling and multistage hydraulic fracturing technology. However, as the industry moves forward, EOR should not be overlooked as a subset of IOR. Wiggins most recently served as president and chief engineer of Mid-Con Energy Group, and has more than 30 years of experience in academia and the upstream oil and gas industry.

He asserts that only a long-term commitment to understanding reservoir behavior, and to developing technologies around that behavior, will maximize ultimate recovery of the country’s massive resources. In an SPE planning meeting, Wiggins discussed how embracing horizontal drilling and multistage fracturing in unconventional reservoirs had shifted industry’s focus to large initial production rates in the short term, while stifling efforts aimed at long-term reservoir management. Wiggins encourages engineers and managers to take a long-term approach to their wells, and not be so focused on the short-term payout of high producing wells, which may yield only 10-15 percent of the original oil in place.

In recent years, enhanced oil recovery generally has been bypassed for large IPs and the quick return-investment cycles of horizontal drilling and multistage fracturing in unconventional reservoirs. Wiggins worries that the total reliance on these short-term results by managers and young engineers eventually may damage the industry, unless well operators also have a good understanding of managing a reservoir over its entire production life cycle.

When looking at the application of enhanced oil recovery practices in unconventional reservoirs, Wiggins states that thus far there has been no set answer for which approach works best. He encourages continued research and field work in the area. Wiggins notes that traditionally, companies have injected fluid to displace hydrocarbons from rock, but says it remains to be seen whether injecting water or chemicals will have any significant impact on low-permeability reservoirs.

There are additional questions about carbon dioxide’s ability to interact with enough oil to make CO2 injection economic. Wiggins encourages continued research in this area, pointing out that if operators are recovering only 10-15 percent of the total oil in place in unconventional reservoirs, the industry is missing out on a tremendous oil target that should not be ignored.

Addressing CO2 for enhanced oil recovery, Wiggins recognizes the perception of carbon capture and sequestration, and that injecting CO2 into an oil-bearing reservoir for enhanced recovery while disposing of the CO2 is seen as a win-win for industry. But he cautions that only a small portion of these projects actually have been implemented. Additionally, continued negative public perceptions of the oil and gas industry may impact its ability to successfully apply this technology in a large number of reservoirs.

Wiggins also discussed the role of the U.S. Department of Energy in funding oil and gas research. Once a longtime supporter of the Improved Oil Recovery Conference, funding from the DOE has faded for many oil and gas initiatives in favor of renewable energy research, and projects related to clean-coal CO2 sequestration. Wiggins says he firmly believes in DOE support for fundamental research related to exploring and producing the United States’ vast oil and gas resources, specifically in the areas of reservoir characterization and the recovery process. He says he believes that overall, the oil and gas industry has lagged in creating the right research environment for long-term enhanced oil recovery growth. Wiggins encourages practitioners to emphasize the research aspects of operations to realize the future payoff.

This year’s Improved Oil Recovery Conference was being held at the Cox Business Center in downtown Tulsa, and featured more than 100 papers devoted to the science of improved oil recovery. The event also was to include exhibitors from around the country, showcasing their products and technologies.

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