An Experimental Study to Improve Gas-Condensate Well Productivity

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SUMMARY

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Natural gas is a more environmentally friendly fuel than oil. Although both gas and oil are composed of hydrocarbons, gas is usually composed of light components such as methane, while oil is composed of heavier components. Many natural gas reservoirs have a certain amount of heavy components which under high reservoir pressure is present in the gas-phase. As the pressure decreases beyond a certain value, these heavy components fall from the gas phase and form a condensate bank (liquid phase) around the gas production well. This condensate bank can significantly reduce the productivity of the gas. Our project is concerned with preventing the accumulation of the liquid phase. We performed an experimental study to improve liquid mobility by chemical treatment. The improvement of the liquid mobility can be achieved by changing the rock wettability to a non liquid-wet state. The result is less trapping of liquid in the small pore spaces and consequently higher liquid mobility. In this poster we will present the results of our experimental work on carbonate rock wettability and our analysis on how it is possible to improve gas-condensate well deliverability through chemical treatment.