Getting the Last Few Drops out of a Large Oil Reservoir in South Timbalier 52 Field, Gulf of Mexico

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ABSTRACT

Chevron has put an emphasis on increasing the recovery in its existing reservoirs through better reservoir management. The 9000' sand reservoir "B" is the single largest oil reservoir in South Timbalier 52 Field. It has produced over 26 MMBO (million barrels of oil) and 24 BCFG (billion cubic ft of gas) since the start of production in 1984. The 9000' sand is a thick deltaic sand with a 140 ft hydrocarbon column. The reservoir was initially developed with seven wells in the mid-1980s; individual well production ranged from 2 MMBO to 5.7 MMBO. In 1999, Chevron drilled an updip well, the 14ST2, to drain the attic reserves in the field. This well has produced almost 1 MMBO to date. In 2012, Chevron approved an additional attic well, the 13ST2, about 1900 ft south of the earlier 14ST2 well. The location was based on a study of the water cuts of the producing wells in the reservoir through time and the spacing of the remaining producers. Prior to the drilling of this well in 2013, the asset team tried to identify other areas of the reservoir that might have bypassed reserves by looking at multiple pulsed neutron logs that had been run in the producing wells over time. The pulsed neutron logs showed an uneven movement of the water contact and suggested that individual wells were only draining oil from a radius of between 800 and 1500 ft around the wellbore. This was confirmed by the results of the 13ST2 well, which found an oil-water contact over 30 ft lower than the contact in the 14ST2 well. The 13ST2 well was put on production with an initial rate of over 500 BOPD (barrels of oil per day). The pulsed neutron log study indicated there was remaining undrained oil in the northern part of the reservoir. Chevron is planning to drill a well in that area in 2014. The asset team gained a better understanding of the 9000' reservoir and how it produced by looking at historical pulsed neutron logs and water cut information through time. Applying this knowledge has led to increased recovery of the original oil in place.