



## Polymer Re-Treats Unlock Significant Additional Oil

by Randy Prater,  
Polymer Services LLC

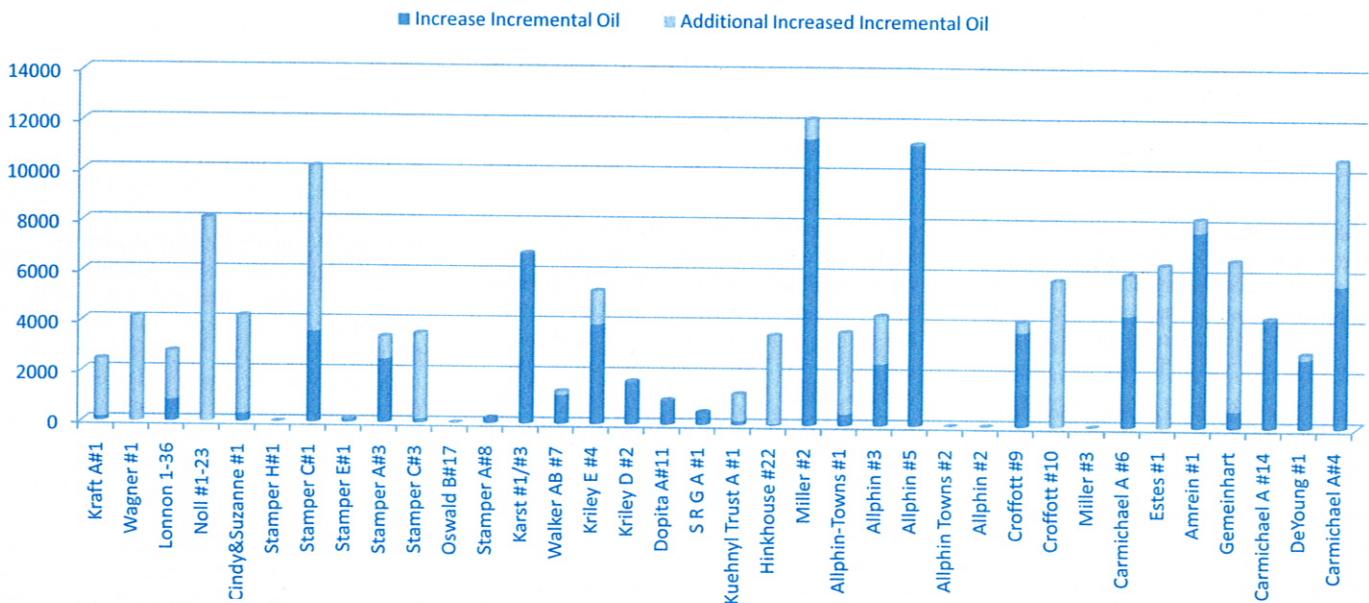
Since 2003, Polymer Services has performed 36 gel polymer re-treats on Kansas Arbuckle

polymer injection. The purpose of this treatment is to clean-up the near wellbore area to remove any fines, dehydrated drilling mud, scale or iron sulfide and clean out the water flow channels, in order to facilitate the flow of gel polymer into the water section and prevent damaging or plugging the oil flow paths during polymer injection. Over the

cantly greater oil recoveries from gel polymer re-treats.

Additional sources of information on polymer treatments in Kansas can be obtained from the Tertiary Oil Recovery Project, The University of Kansas website, [www.kgs.ku.edu/Magellan/Polymer/index.html](http://www.kgs.ku.edu/Magellan/Polymer/index.html).

### Increased Incremental Oil



dolomite wells which had undergone at least one earlier treatment. Of the 36 re-treatments, 24 treatments yielded incremental oil production, ranging from 22 bbl to 8,090 bbl of additional oil. Eight treatments did not appear to have yielded incremental oil production, and no data was available on third party websites for four of the treatments. Three wells have had a 3rd treatment, also resulting in additional oil recovery. The histogram indicates the relative success of the well treatment.

Many of the wells appeared to have responded better to a second gel polymer treatment than the first treatment, in terms of additional oil recovery resulting from the treatment. While there could be a number of reasons for this phenomenon, my theory is as follows:

“As early as 1989, I normally recommend an acid treatment to be pumped prior to gel

years, this evolved into an “acid frac,” during which large volumes of acid are pumped at very high injection rates and pressures. The goal of this acid frac is not only cleanup, but also an attempt to acid frac into “new oil,” and connect mobile oil saturation to the wellbore, which may not have previously been connected to the wellbore. The first such pre-polymer acid frac was performed in Rooks County, Kansas in January, 2001.”

This same procedure was implemented as a preparation for a gel polymer re-treat in September, 2003. On subsequent treatments, it became apparent the original gel polymer, still in place near the wellbore, was acting as an in-depth diverting agent, preventing the acid from easily entering the water section and focusing the energy of the acid frac into the oil section, which created additional stimulation, in-depth, to the oil section. This method has been shown to result in signifi-

A recent SPE paper 89464-PA, *Controlling Water Production Using Gelled Polymer Systems* by G.P. Willhite, University of Kansas and R.E. Pancake, Murfin Drilling Co, Inc., appeared in *SPE Reservoir Evaluation & Engineering*, Volume 11, No. 3, June 2008. [www.spe.org/elibrary/servlet/spepreview?id=SPE-89464-PA&speCom monAppContext=ELIBRARY.](http://www.spe.org/elibrary/servlet/spepreview?id=SPE-89464-PA&speCom monAppContext=ELIBRARY.)

### Workshop Topics To Look Forward To

(check calendar on [www.pttc.org](http://www.pttc.org) for latest information)

- 5/19 Keys to Complex Well Economic Success - Oklahoma City, OK.
- 6/30 Water/Gas Shutoff and Conformance Control - Knowing What To Do/Where - Tulsa, OK.