# Hydrocarbons in Old Places: New Production from Existing Fields

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## Abstract

Current difficult economic circumstances within the oil and gas industry allow identification of creative methods to economically identify and produce reserves. Historically, one of the most cost inefficient aspects of the industry is the process of mapping and drilling exploration wells. Success rates for these projects are generally quite low.

An operator attempted to minimize this exploration risk by returning to assets that were supposedly already exhausted. The Wilcox formation in southeast Oklahoma was a prolific oil productive reservoir in several fields during the 1920 to 1950 time frame. The production scheme left open the possibility that significant reserves were possibly bypassed.

Magnetic resonance (MR) logs were added to the evaluation program for pilot wells. The evaluation of permeability from Bray-Smith calculation combined with fluid identification from 2 DFC models provided reservoir conclusions that are impossible with other logging devices.

The evaluation process identified productive intervals that were deeper in the Wilcox section. Isolating boundaries created migration traps in several segments of the deeper horizons in the reservoir. Several of these were low resistivity fluid traps. The MR device, through the 2 DFC process, identified several of these intervals, and the Bray-Smith permeability calculation verified the productive potential of the section.

Several of these low resistivity intervals have been identified and recompletion attempts made. Production verification of the forecasted results has been extremely positive, with several of the intervals producing at good oil and gas rates water free or with minimal water. This significant Oklahoma reservoir has been revitalized with this process.