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May 2020 – Members' Only Technical Webinar

Potential New Learnings from DFIT's, Controlled Frac Flowbacks & Extended Shut-Ins of Unconventional Reservoirs

For CSUR's May 2020 installment of the Technical Webinar Series, we had Robert Hawkes deliver his presentation on Potential New Learnings from DFITs, Frac Flowback Analyses and Extended Shut-Ins. Robert is a prominent and experienced formation evaluation advisor within our industry. In collaboration with UofA, UofC and other individuals & organizations, he has been studying fluid-rock interactions using both pre and post-completion data.

The presentation primarily focused on understanding the basic mechanics and drivers that influence overall well performance. In addition, Robert also focused on how he continues to utilize traditional and established pressure transient techniques to assess critical dynamic (flow) parameters from modern well designs & operations. Robert went on to suggest that simple diagnostic tools are, at most times, just as effective in evaluating completion effectiveness

Finally, given the prevailing challenging times for most operators, the benefits of extended shut-ins were highlighted from an imbibition perspective and how that could potentially lead to better well productivity upon resumption.

ABSTRACT: The industry is potentially preparing to shut in hundreds if not thousands of wells during this economic downturn. The shut in period allows the imbibition process to evolve, allowing completion water to move deeper into the water-wet/clay-rich formation, resulting in lower water saturation and a corresponding higher hydrocarbon relative permeability near the fracture surface. In contrast, during production, natural capillary forces are balanced by viscous forces, thereby trapping water at much higher saturations around the fractures and reducing the hydrocarbon flow.
Fluid imbibition and soaking during various previous CSUR talks discussed the concepts of fluid imbibition, DFIT's, frac flowback dynamics as well as reservoir hydrocarbon fluid recoveries. So, what have we learned? What's changed & what has stayed the same for unconventional wells undergoing multi-stage hydraulic fracture treatments with such large fluid treatments? More importantly, have we learnt more and are we able to glean additional information & data from the reservoirs during DFIT's, DFIT flowbacks, post frac flowbacks and extended shut-ins? Hopefully the answer that we should be expecting is "yes"! In conjunction with work being done at UofC, UofA & other organizations and individuals, these findings and advances will be highlighted during the webinar.

PRESENTER: Robert Hawkes, Abra Controls

Robert graduated from the Southern Alberta Institute of Technology in Calgary, Alberta, Canada with a diploma in Petroleum Engineering Technology in 1979. Robert has authored and co-authored over 20 papers and was co-Author, Chapter 3 "Gas Well Testing and Evaluation" of the 2007 Modern Fracturing - Enhancing Natural Gas Production, engineering text book. Robert works at Abra Controls Inc in Calgary as General Manger specializing in Fracture Driven Diagnostics. Hawkes was an SPE Distinguished Lecturer from 2018 – 2019 and from 2007-2008. In 2011, Hawkes was the recipient of the SPE Canadian "Reservoir Description and Dynamics" award and recently was recognized for his achievement as the recipient of the 2016 Canadian "Completions Optimization and Technology" award. Robert has served on a multitude of SPE workshops and conferences and was the Program Committee Chairman for the 2013 Hydraulic Fracture Flowback Workshop.

May 13, 2020.