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The Other 80%; New PCP Design Yields Improved Operating Metrics

Biography

Mackenzie R Gusnowski has been involved with developing plans to exploit, drill, complete, operate, optimize, and ultimately apply EOR strategies in heavy oil fields throughout his career. This included managing teams to execute projects on time and on budget, coordinating the efforts of multi-disciplinary team members, writing project proposals and presenting post mortem analysis. He has held technical and leaderships roles at Caltex Energy Inc., Gusnowski Petroleum Ltd., Pearl Exploration and Production Ltd., Husky Energy Inc., and ExxonMobil Canada Corp. Prior to obtaining his Petroleum Engineering Technology diploma from the Northern Alberta Institute of Technology, Mackenzie worked in both an operations and service setting in the heavy oil fields surrounding Lloydminster, Alberta / Saskatchewan, Canada. Mackenzie is currently the Lead Production Technologist for Caltex Energy Inc.'s heavy oil assets (a private Exploration and Production company), President and CEO of Gusnowski Petroleum Ltd. (a private Technical Consulting Company), and also President and CEO of Alice Petroleum Ltd. (a private Exploration and Production Company currently specializing in waste management).

Abstract

CHOPS (Cold Heavy Oil Production with Sand) is being used in the Lloydminster AB / SK region with resounding success. Although commercial development was in its infancy at start of the 1990's, continuous improvement allowed this production method to become the preferred choice over the past 15 years. The major contributing factor was the advent of the PCP (Progressive / Progressing Cavity Pump). The design methodology of the PCP, although still significantly being pursued, has focused largely on increasing market share in other operating envelopes (i.e.: light oil, coal bed methane, thermal EOR projects, et cetera). The narrow operating margins for producers in heavy oil were not conducive to piloting new designs or materials --- the benchmark was set with the inception of the 15-1400 pump & everything since has been compared to this standard. In 2003 a new design was introduced by Weatherford. The uncomplimentary name was the *fatboy* pump. This technology, much to the chagrin of the ardent 15-1400 supporters, provided an avenue for E&P (Exploration and Production) Companies to select resoundingly different design philosophies, & with prudent well selection outperform historical metrics of the existing pump suite. This presentation gives some technical results & my personal insights to the *fatboy* pump.

So what of the first part in the presentation title "The Other 80%;". Pareto's Principle (or Pareto's Law) equates that, in simple terms, anything in a few (20%) is vital & many (80%) are trivial. In Pareto's view, being an economist, 20% of the people owned 80% of the wealth. Project Managers know that 20% of the work (the first 10% & the last 10%) consume 80% of your time & resources. You can apply the 80 / 20 Rule to almost anything, from the science of management to the physical world. Applying this to the Heavy Oil region results in 20% of your wells delivering 80% of your value (or consuming 80% of your resources); this could be called into question pending your operating area (i.e.: if you have a minimal volume of properties or wells), but looking at the Heavy Oil region as a whole this theory is sound. Although no one can tout this hasn't been a feasible approach, the vital flaw is that it overlooks the fact that 80% of the assets are underperforming or being overlooked. The recent commodity surge (& subsequent collapse) allowed E&P companies to allocate resources to this underutilized well base. This commodity uptick enabled operators & technology companies alike to implement new technology, enabled frontier design considerations, & provided producers an avenue to exploit the idle or underperforming 80%. The challenge now is to implement the lessons learned to further improve operating netbacks.