

MVP Frac™ - Enhanced Gas Production

Business Needs

Our customer, operating in a thick reservoir, needed to improve vertical sand distribution within their hydraulic fractures. This would allow a greater portion of the net pay zone to be propped, and in turn, improve gas production.

Trican Solution

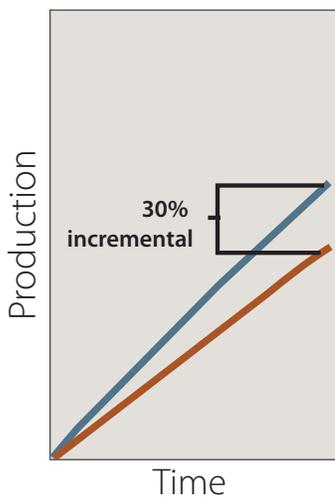
Trican's MVP Frac™ (Maximum Volume Placement) is a two-part slick water frac system comprised of both a non-energized component (Trican's FlowRider® additive), and an energized component. MVP Frac imparts a hydrophobic coating onto the proppant surface creating an attraction to gaseous phases in the fluid, making proppant more buoyant without increasing fluid viscosity. The fluidized proppant enhances transportation, allowing greater propped fracture height and length, and greater overall conductivity.

Production data was collected from an operator's wells completed during 2012 and 2013, making use of three different fluid systems: nitrogen foamed surfactant water, slick water, and MVP Frac. In 2012, slick water replaced foamed surfactant as the preferred fluid system due to logistical constraints handling large volumes of nitrogen gas, and a desire to create a longer, more complex fracture network. The lack of viscosity in the slick water design is thought to have yielded less propped fracture height. In 2013, MVP Frac was incorporated to address this issue. This created a long, complex fracture network with greater propped fracture height. All of the operator's wells were equipped with comparable multistage, ball actuated liners with open hole packer isolation.

A total of 33 wells were evaluated using publically available completion and production data. Of the 33 wells, 11 were stimulated with nitrified foamed water, 10 completed with slick water, and 12 using slick water with MVP Frac.

Results

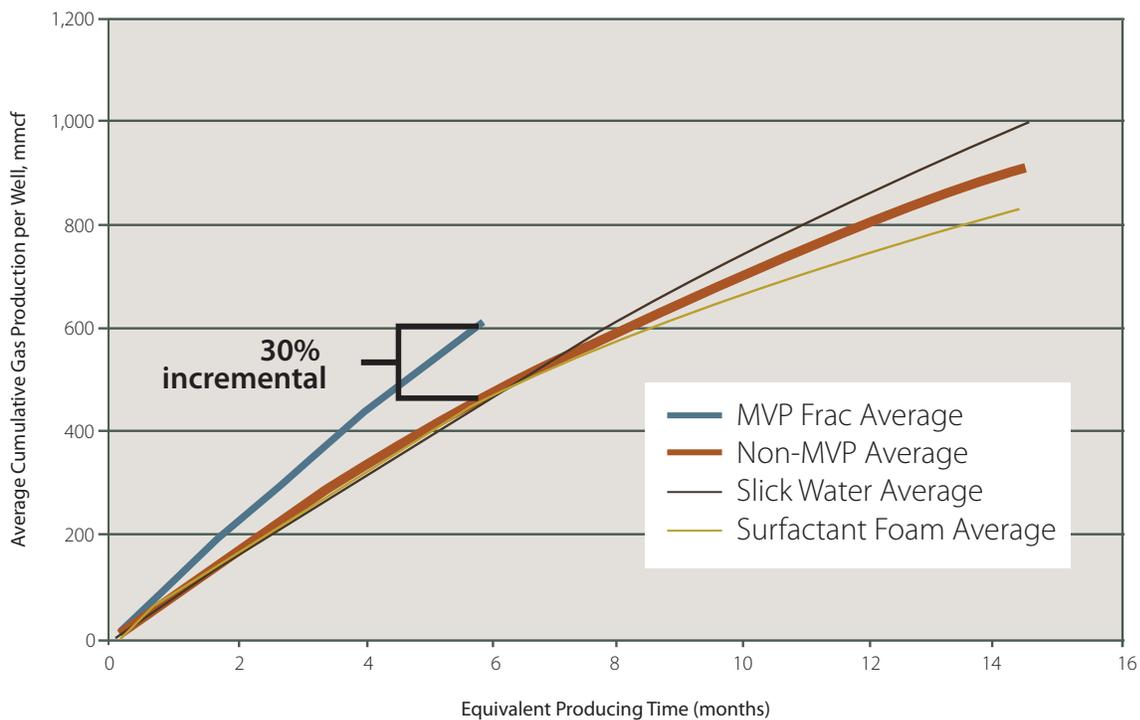
The wells stimulated with nitrified foam and slick water include more than a full year of production data. The MVP wells, completed more recently, include six months of data. Production has been averaged based on fluid system used and compared on time scales with all down time eliminated. After six months, the average gas production shows a 30% increase when using MVP Frac.



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	MVP Frac	Slick Water	Surfactant Foam	Slick Water and Surfactant Foam Combined Average
Number of wells	12	10	11	21
Average number of stages	14.3	14.9	13.6	14.2
Average total proppant pumped tonne (lb)	1,036 (2,287,000)	1,083 (2,387,600)	913 (2,013,000)	994 (2,191,000)
Average rate m ³ /min (bpm)	5.7 (36)	5.1 (32)	4.0 (25)	4.5 (28)
Average surface treating pressure MPa (psi)	41.0 (5,946)	39.5 (5,729)	46.6 (6,759)	43.2 (6,266)
N ₂ volume 1000 scm (mscf)	146 (5,165)	45 (1,598)	893 (31,541)	489 (17,282)
Average water volume pumped m ³ (gallons)	6,547 (1,729,500)	7,117 (1,880,100)	1,270 (335,500)	4,054 (1,070,900)

Cumulative Production - Pouce Coupe



Case Study Snapshot

Study Area: Montney Formation

Challenges:

- Improve vertical sand distribution in reservoir with a thick pay zone

Trican Solution:

- Use Trican's MVP Frac™ technology along with a slick water fluid system

Results:

- Increased average gas production by 30%



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