



Case Studies

Complex nano-Fluid® Technology for the Western Canadian Sedimentary Basin



OVERVIEW

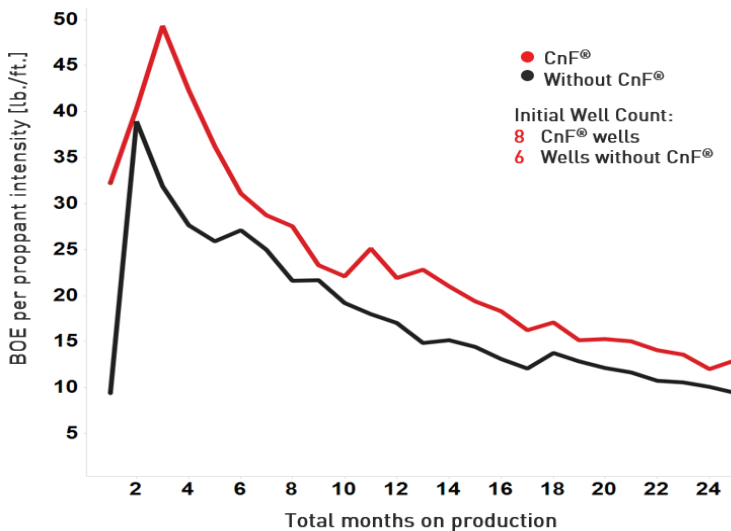
Flotek's Complex nano-Fluid® (CnF®) patented technology is formulated for the unique geology, chemistry and economics of the Western Canadian Sedimentary Basin – delivering exceptional performance and return on investment.

The following case studies illustrate the effectiveness of Flotek's reservoir-centric approach to prescribing optimized and targeted chemistries for your reservoir's unique conditions.



Source: PacWest Consulting Partners

AVERAGE PRODUCTION CURVES:
CNF® VS. WELLS WITHOUT CNF®*



CARDIUM FERRIER: RESULTS

In the Cardium Ferrier Area, 14 wells were analyzed comparing wells treated with CnF® to non-treated wells, with first production dates ranging from January 2013 to January 2015. The CnF® wells exhibited higher peak rates and overall higher monthly rates over the 24-month production period.**

CnF® Enabled Incremental Cumulative BOE
(Not Normalized Volumes)

At 3 months 9,519 BOE
At 6 months 15,850 BOE
At 12 months 21,234 BOE

*Source: RS Energy Data

**All wells were normalized for BOE per proppant intensity per production time.

UPPER MONTNEY ALTARES: RESULTS

In the Upper Montney Altares Area, 13 wells were analyzed comparing wells treated with CnF® to non-treated wells, with first production dates ranging from January 2014 to January 2018. When compared to wells with similar completion parameters, the CnF® wells exhibited sustained uplift over the 24-month production period.**

CnF® Enabled Incremental Cumulative BOE

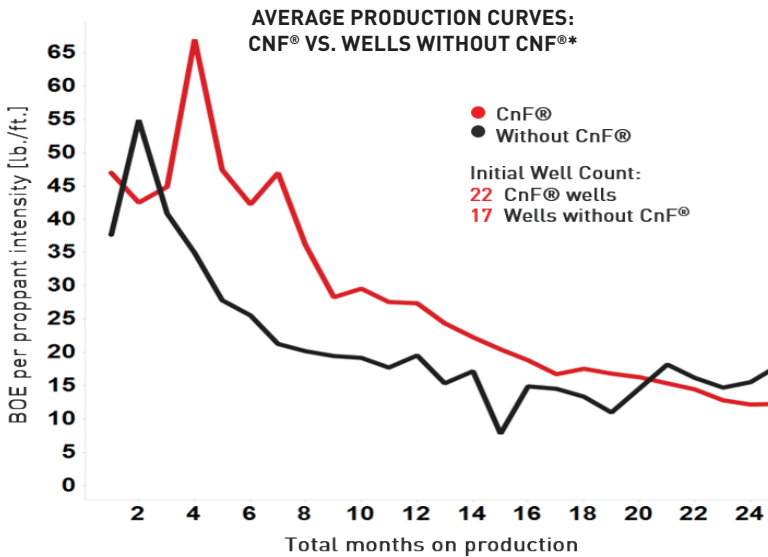
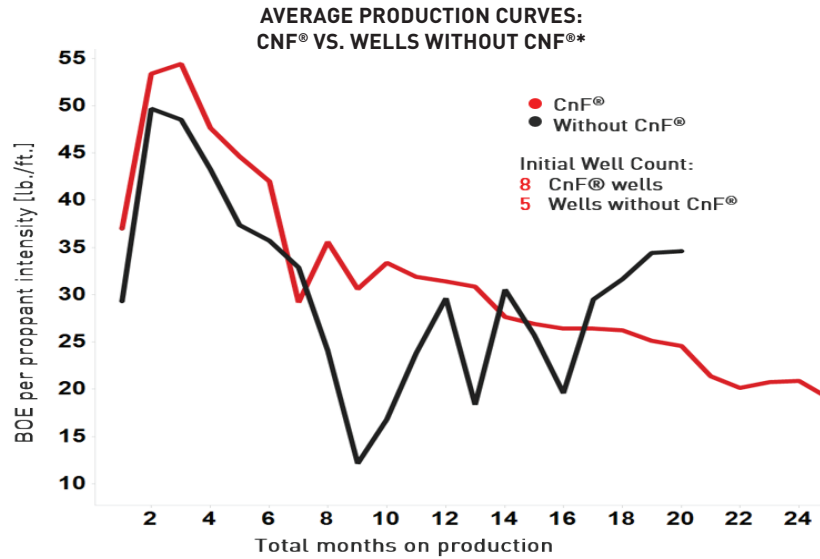
(Not Normalized Volumes)

At 3 months 14,342 BOE

At 6 months 29,313 BOE

At 12 months 74,078 BOE

*Source: RS Energy Data



UPPER MONTNEY SEPTIMUS: RESULTS

In the Upper Montney Septimus Area, 39 wells were analyzed comparing wells treated with CnF® to non-treated wells, with first production dates ranging from August 2014 to August 2017. The wells treated with CnF® consistently outperformed the untreated population for the first 20 months of production time.**

*Source: RS Energy Data

**All wells were normalized for BOE per proppant intensity per production time.

UNPARALLELED TECHNOLOGY

Flotek's Complex nano-Fluid® flagship line of technologies complement the chemistry of the reservoir to reduce capillary pressures and optimize its flow area through patented, customized formulations.

Our CnF® stimulation chemistries are based on naturally sustainable and non-toxic citrus oils to improve well performance and productivity.

CnF® PERFORMANCE DRIVERS: RESERVOIR IMPACT

DELIVERABILITY

Nano-droplet "form" optimized to affect the largest surface area

Encompassing all fluid environments

DAMAGE MITIGATION

Prevention & remediation

COMPATIBILITY

Prevention of emulsions, precipitates, and reservoir damage

SOLVENCY

Solvent dissolves deposits

Solvent coats reservoir surface

FLUID FLOW CAPACITY - CAPILLARY PRESSURE & ADSORPTION/DESORPTION

Increased rate of fluid flow through reservoir

Long-term impact on reservoir contributing flow area

ECONOMIC BENEFITS

Maximizes well performance

Higher initial performance as seen in production decline curves

Payout between 1-3 months, on average

Improving economics by lowering the gas-to-oil ratio