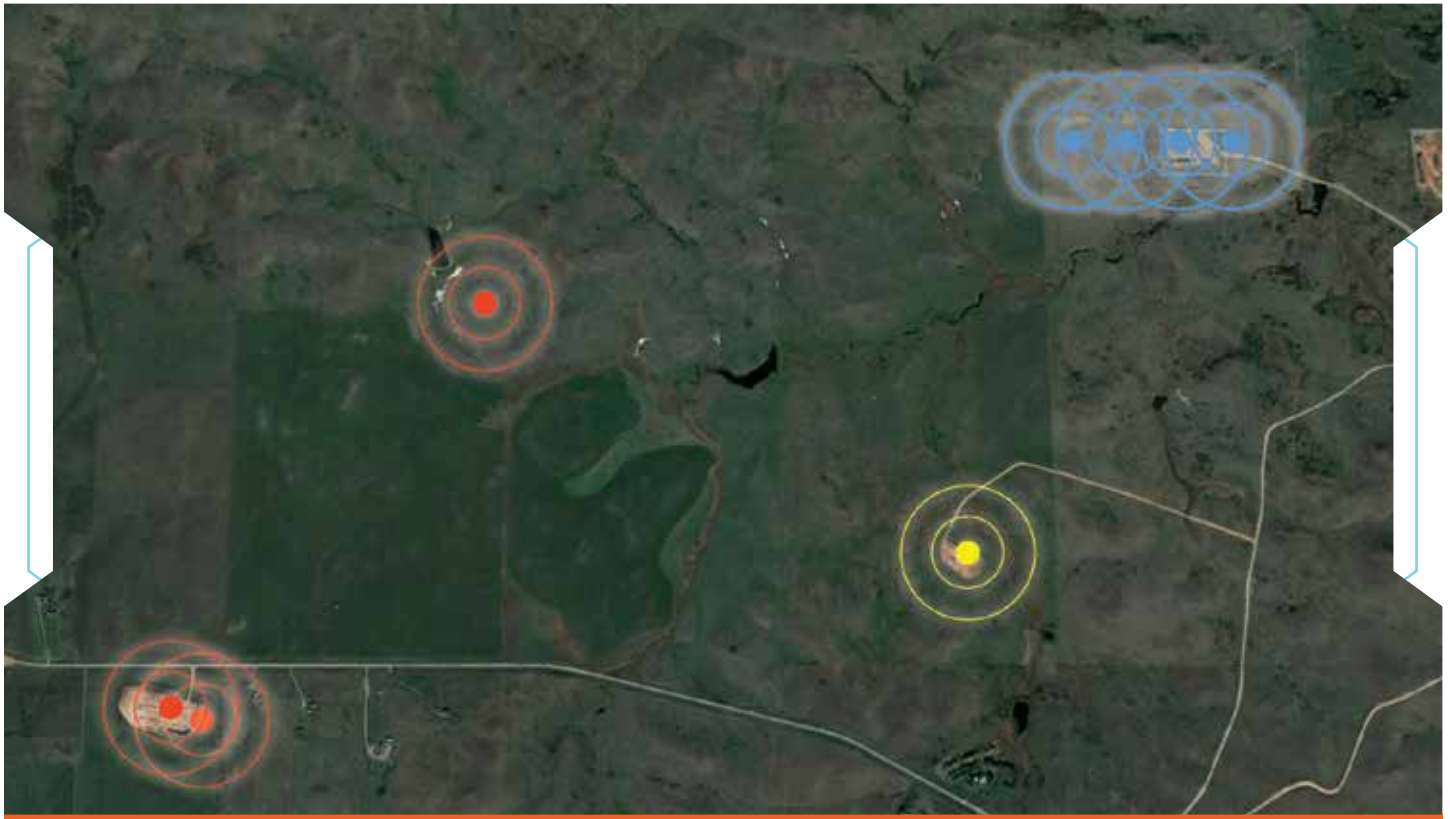


CASE STUDY ANALYSIS

BAKKEN



Dunn County, ND

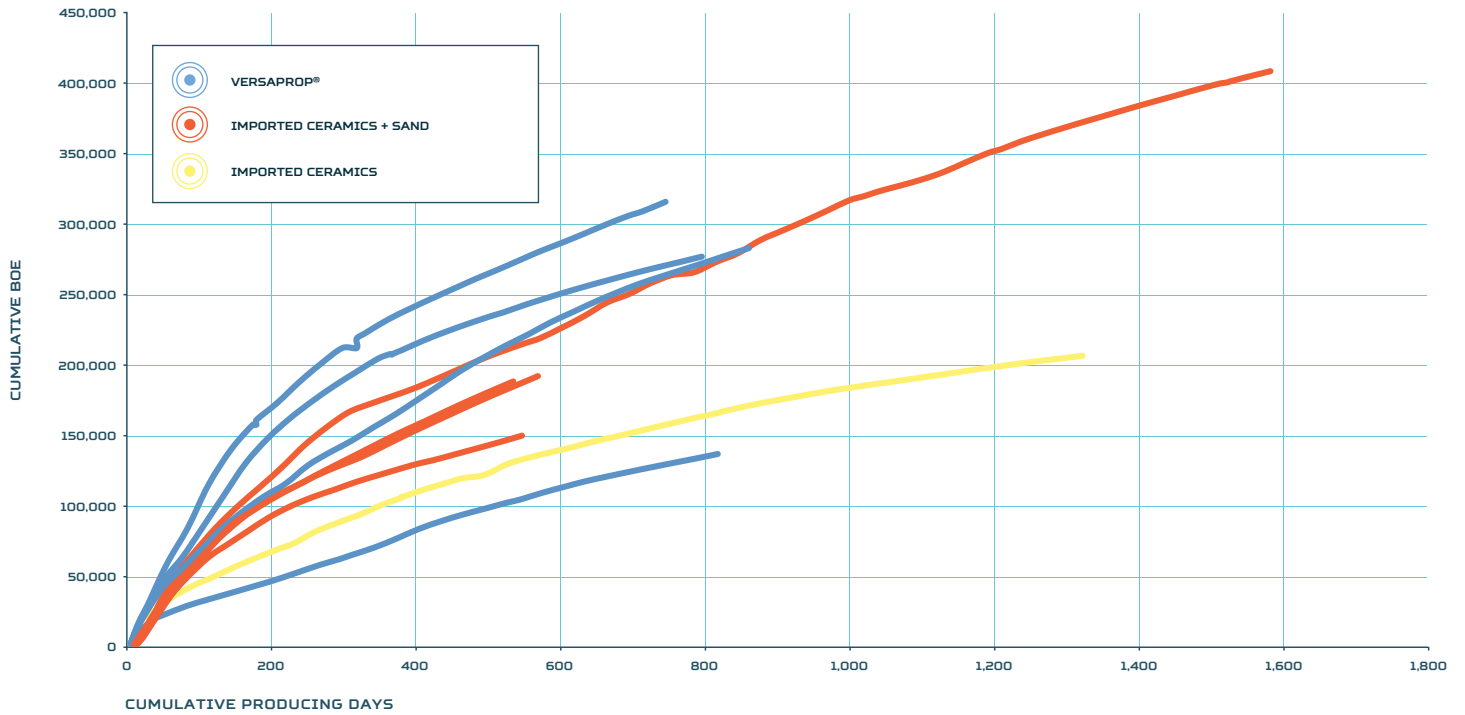
CASE SUMMARY

Proppants have a tough job. They must retain fracture geometry and provide sustainable conductivity to the wellbore at application conditions. How well they do their job depends on the application environment. Unconventional wells, with their thin fractures, minimize proppant pack height and increase the pressure on the proppant bead. In thin layer/monolayer conditions, only the highest strength and highest quality proppants have the strength to maximize well production.

Only some proppants are Well Worth It!



CUMULATIVE PRODUCTION, VERSAPROP® VS NEIGHBORING WELLS



VERSAPROP® DIFFERENTIATION

OVER IMPORTED CERAMIC SOLUTIONS + SAND

↑ **21%** ↑
INCREASE

525-Day
Cumulative BOE

\$1.2^M
HIGHER

3-Year Cash Flow

PARAMETERS USED IN ANALYSIS:
WTI @ \$55/BBL
GAS @ \$4.00, 20% ROYALTY

| Proppant Type | 525-Day Cumulative BOE | 3-Year Cash Flow (\$ MIL) |
|--------------------------|------------------------|---------------------------|
| VersaProp® | 268,468 | 9.90 |
| VersaProp® | 212,613 | 7.64 |
| VersaProp® | 236,154 | 8.47 |
| VersaProp® | 100,590 | 3.70 |
| Imported Ceramics | 127,901 | 4.78 |
| Imported Ceramics + Sand | 209,004 | 7.72 |
| Imported Ceramics + Sand | 181,168 | 6.64 |
| Imported Ceramics + Sand | 144,984 | 5.27 |
| Imported Ceramics + Sand | 184,765 | 6.68 |

| | | | | | | | | | |
|--|---------------------------------|--------------------------|------------------------|-----------------------------|-------------------------------|------------------------|------------------------|------------------------|------------------------|
| Well Number * | 10037917 | 10037918 | 10037919 | 10037920 | 38186 | 9891 | 10067899 | 10067900 | 10079076 |
| Basin | Bakken | Bakken | Bakken | Bakken | Bakken | Bakken | Bakken | Bakken | Bakken |
| State, County | ND, Dunn | ND, Dunn | ND, Dunn | ND, Dunn | ND, Dunn | ND, Dunn | ND, Dunn | ND, Dunn | ND, Dunn |
| Well Name | Two Shields Butte 3-24 12-4H | Two Shield Butte 3-24 | Skunk Creek 3-24 | Skunk Creek 3-24 25-14H3 | Chokecherry 149-93-21A-22H | Skunk Creek 23-14HC | Wolf Chief 27-34HC | Wolf Chief 27-34HZ | Wolf Chief 27-34HB |
| API # | 33-025-01012-00-00 | 33-025-01273-00-00 | 33-025-01274-00-00 | 33-025-01275-00-00 | 33-025-01679-00-00 | 33-025-01431-00-00 | 33-025-02334-00-00 | 33-025-02335-00-00 | 33-025-02333-00-00 |
| Latitude | 47.71682 | 47.71682 | 47.71682 | 47.71682 | 47.712108 | 47.705534 | 47.701684 | 47.701649 | 47.701719 |
| Longitude | -102.529205 | -102.52896 | -102.529083 | -102.52883 | -102.558139 | -102.539056 | -102.56944 | -102.569244 | -102.569636 |
| Service Provider | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request |
| Operator | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request | Available upon request |
| Trajectory | Horizontal | Horizontal | Horizontal | Horizontal | Horizontal | Horizontal | Horizontal | Horizontal | Horizontal |
| Fracture Date | 3/30/14 | 3/31/14 | 3/30/14 | 3/22/14 | 10/31/12 | 3/7/12 | 1/26/15 | 2/7/15 | 2/7/15 |
| True Vertical Depth (ft) | 10,517 | 10,620 | 10,468 | 10,614 | 10,750 | 10,605 | 10,635 | 10,699 | 10,639 |
| Lateral Length (ft) | 10,254 | 9,818 | 9,759 | 9,703 | 10,000 | 9,155 | 10,248 | 10,298 | 10,112 |
| Bottom Hole Temp (°F) | 257 | 259 | 256 | 259 | 261 | 259 | 259 | 260 | 259 |
| Total Water Volume (gal) | 3,290,878 | 3,407,698 | 3,278,509 | 3,443,359 | 2,499,301 | 2,154,436 | 3,471,939 | 3,634,210 | 3,379,233 |
| Frac Fluid Type | SlickCrossLinkHyb | SlickCrossLinkHyb | SlickCrossLinkHyb | SlickCrossLinkHyb | CrossLink | CrossLink | SlickCrossLinkHyb | SlickCrossLinkHyb | SlickCrossLinkHyb |
| Saint-Gobain Ceramic Proppant (Y/N) | Y | Y | Y | Y | N | N | N | N | N |
| Proppant Type | Ceramic Only | Ceramic Only | Ceramic Only | Ceramic Only | Ceramic Only | Sand + Ceramic | Sand + Ceramic | Sand + Ceramic | Sand + Ceramic |
| Total Proppant Mass (short tons) | 1,753 | 1,772 | 1,845 | 1,866 | 1,306 | 1,669 | 2,048 | 1,998 | 2,014 |
| Total SG Proppant Mass (short tons) | 1,753 | 1,772 | 1,845 | 1,866 | 0 | 0 | 0 | 0 | 0 |
| SG Proppant Name | VersaProp® | VersaProp® | VersaProp® | VersaProp® | - | - | - | - | - |
| Total Sand Proppant Mass (short tons) | 0 | 0 | 0 | 0 | 0 | 705 | 1,284 | 1,298 | 1,259 |
| Sand Proppant Name | - | - | - | - | - | Sand | Sand | Sand | Sand |
| Total Other Proppant Mass (short tons) | 0 | 0 | 0 | 0 | 1,306 | 964 | 764 | 700 | 755 |
| Other Proppant Name | - | - | - | - | Imported Ceramics | Imported Ceramics | Imported Ceramics | Imported Ceramics | Imported Ceramics |

* Well numbers as generated by NavPort



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