SAINT-GOBAIN

CASE STUDY ANALYSIS
RT 2 WELLS

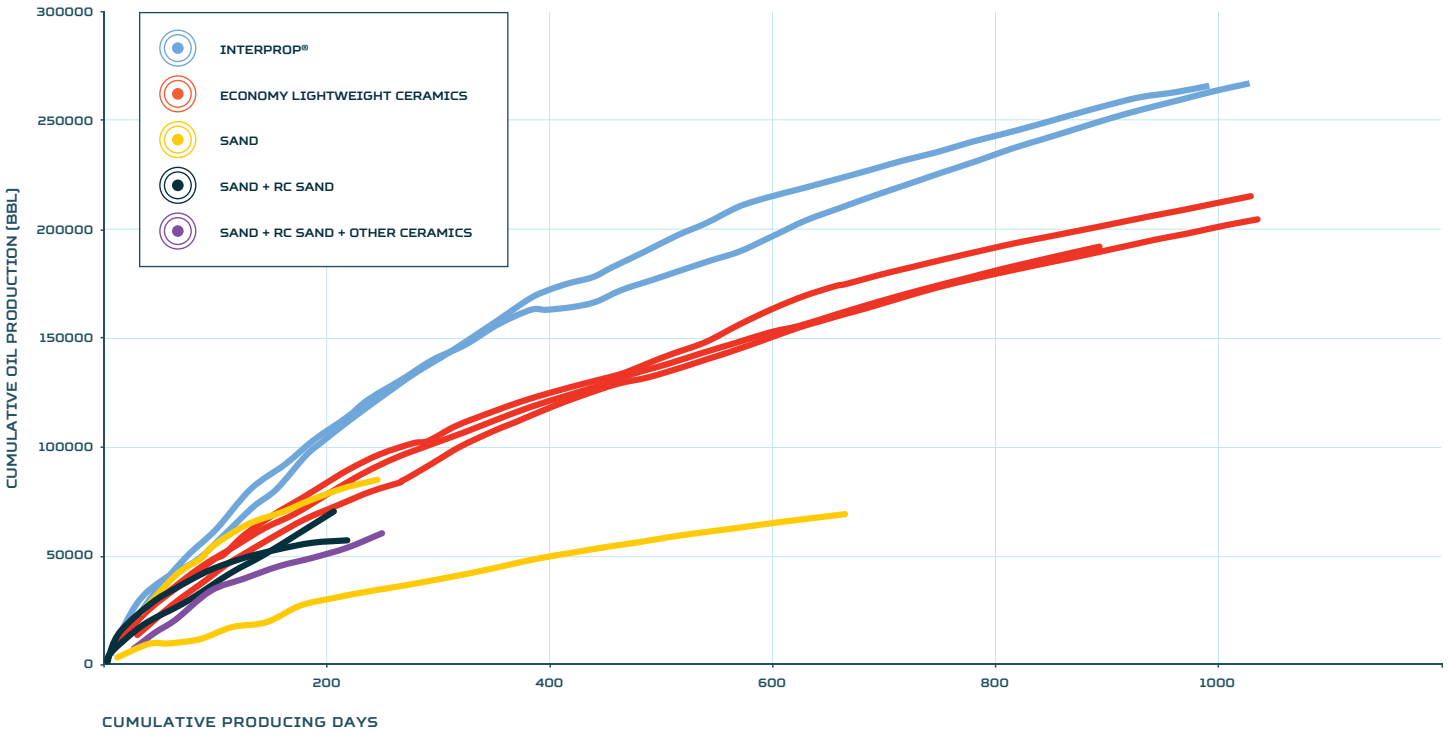
WELL WORTH IT™

Williams County, ND

Case Summary

Proppants have a tough job. They must retain fracture width and height, and provide sufficient conductivity to the fracture in downhole application conditions. How they do their job depends on their environment. Unconventional wells, with their thin fractures, minimize proppant pack height and increase the pressure on the proppant bead. In such thin layer/monolayer conditions, only the highest strength and quality proppants have sufficient strength to outperform sand and maximize well production output. Only some proppants are Well Worth It!

CUMULATIVE PRODUCTION, INTERPROP® VS NEIGHBORING WELLS



INTERPROP® DIFFERENTIATION

OVER ECONOMY LIGHTWEIGHT CERAMICS

↑37%↑ INCREASE — 215-Day Cumulative Oil

$2.4M HIGHER — 3-Year Cash Flow

OVER COMPLETIONS CONTAINING SAND

SAND + OTHER CERAMICS + RESIN COATED SAND

↑113%↑ INCREASE — 215-Day Cumulative Oil

$4.5M HIGHER — 3-Year Cash Flow

SAND + RESIN COATED SAND

↑73%↑ INCREASE — 215-Day Cumulative Oil

$3.6M HIGHER — 3-Year Cash Flow

100% SAND

↑102%↑ INCREASE — 215-Day Cumulative Oil

$4.3M HIGHER — 3-Year Cash Flow

Proppant Type	215-Day Cumulative Oil	3-Year Cash Flow ($ MIL)
100% 30/50 and 40/80 InterProp®	112324	8.6
100% 30/50 and 40/80 InterProp®	110335	8.4
100% Economy Lightweight Ceramics	88063	6.7
100% Economy Lightweight Ceramics	82107	6.2
100% Economy Lightweight Ceramics	73542	5.5
100% Sand Only	79987	6.1
Sand + Resin Coated Sand	72726	5.5
Sand + Resin Coated Sand	55598	4.2
Sand + Ceramic + Resin Coated Sand	52224	4.0
100% Sand Only	30268	2.3

Well Number	8906	8863	9371	9341	44431
Basin	Bakken	Bakken	Bakken	Bakken	Bakken
State, County	ND-Williams	ND-Williams	ND-Williams	ND-Williams	ND-Williams
Well Name	Anna 156-100-8-5 1H	Nelson 156-100-17-20 1H	Sylte 156-101-15-22 1H	Sylte 156-101-10-3 1H	Moline 156-101-14-23 1H
API #	33-105-00283	33-105-02557	33-105-02479	33-105-02478	33-105-02882
Latitude	48.343561	48.343561	48.341817	48.341817	48.341548
Longitude	-103.572549	-103.572672	-103.661559	-103.661435	-103.639159
Service Provider	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
Trajectory	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Fracture Date	7/6/2012	7/11/2012	5/12/2012	5/14/2012	2/27/2013
True Vertical Depth (ft)	10212	10320	10372	10246	10669
Lateral Length (ft)	9992	10267	9562	10688	9569
Bottom Hole Temp (F)	252	254	255	252	-
Total Water Volume (gal)	10259550	10233972	10239810	10473834	10702524
Frac Fluid Type	Slickwater	Slickwater	Slickwater	Slickwater	Slickwater
Saint-Gobain Ceramic Proppant (Y/N)	Y	Y	N	N	N
Proppant Type	Ceramic Only	Ceramic Only	Ceramic Only	Ceramic Only	Ceramic Only
Total Proppant Mass (short tons)	2035	2051	2054	2065	2071
Total SG Proppant Mass (short tons)	2035	2051	0	0	0
SG Proppant Name	30/50 & 40/80 InterProp®	30/50 & 40/80 InterProp®	–	–	–
Total Sand Proppant Mass (short tons)	0	0	0	0	0
Sand Proppant Name	–	–	–	–	–
Total Other Proppant Mass (short tons)	0	0	2054	2065	2071
Other Proppant Name	–	–	Economy Lightweight Ceramics	Economy Lightweight Ceramics	Economy Lightweight Ceramics

Well Number	10078714	10078713	10073584	10069014	10017999
Basin	Bakken	Bakken	Bakken	Bakken	Bakken
State, County	ND-Williams	ND-Williams	ND-Williams	ND-Williams	ND-Williams
Well Name	McCauley 5601 41-34 5T	McCauley 5601 41-34 4B	McCauley 5501 14-3 3T	McCauley 5501 14-3 2B	Orcas State 5601 13-16 #3T
API #	33-105-03432	33-105-03431	33-105-03444	33-105-03445	33-105-03118
Latitude	48.313110	48.313980	48.312290	48.313470	48.341985
Longitude	-103.666100	-103.660000	-103.652810	-103.651390	-103.674725
Service Provider	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
Trajectory	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Fracture Date	12/22/2014	12/23/2014	11/25/2014	11/8/2014	10/9/2013
True Vertical Depth (ft)	10556	10491	10528	10387	10468
Lateral Length (ft)	9504	9650	10129	10063	9574
Bottom Hole Temp (F)	258	257	257	255	256
Total Water Volume (gal)	7726589	7642921	3336439	6536208	2384886
Frac Fluid Type	Slickwater	Slickwater	CrossLink	CrossLink	CrossLink
Saint-Gobain Ceramic Proppant (Y/N)	N	N	N	N	N
Proppant Type	Sand + Resin	Sand + Resin	Sand + Ceramic + Resin	Sand Only	Sand Only
Total Proppant Mass (short tons)	1306	1825	2144	5377	1949
Total SG Proppant Mass (short tons)	0	0	0	0	0
SG Proppant Name	–	–	–	–	–
Total Sand Proppant Mass (short tons)	350	318	703	5377	1949
Sand Proppant Name	100 Mesh Sand	100 Mesh & 40/70 White Sand	20/40 & 40/70 Sand	20/40 & 40/70 Sand	20/40 & 40/70 White Sand
Total Other Proppant Mass (short tons)	956	1507	1185 + 256	0	0
Other Proppant Name	30/50 & 40/70 RCS	30/50 & 40/70 RCS	Ceramic & RCS	–	–

SAINT-GOBAIN

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