

Patriot Resources Improves Economics with Regional Sand, Permian Basin

Initial oil production is nearly identical after fracturing with Northern White sand or high-quality regional sand

CHALLENGE

Reduce proppant cost without significantly affecting oil production.

SOLUTION

Use high-quality regional sand from Wisconsin Proppants instead of Northern White sand.

RESULTS

Average productivity index (PI) of wells fractured with regional sand is nearly identical to average PI of nearby offset wells fractured using Northern White sand.



Northern White sand is costly, especially at high volumes

In the Permian Basin, lateral lengths and total proppant pumped per well have been increasing every year, with the median total proppant per well in 2018 exceeding 15 million lbm. This represents an estimated spend of more than USD 3 billion per year on proppant alone (excluding trucking) if Northern White sand were the sole proppant used in the basin.

To reduce completion costs, Patriot Resources wanted to find a less expensive alternative to Northern White sand. In 2018, the primary sizes being used in the Permian Basin had trended toward the fine grades, reaching 97% and 95% for 100 mesh and 40/70 mesh, respectively.

Regional sand in these sizes is readily available in the Permian Basin area at a significantly lower cost to the operator. The regional sand physical properties, however, are not identical to those of the Northern White sand, and Patriot Resources engineers were concerned that the regional sand could adversely affect fracture conductivity and result in reduced oil production.

High-quality regional sand can have similar properties

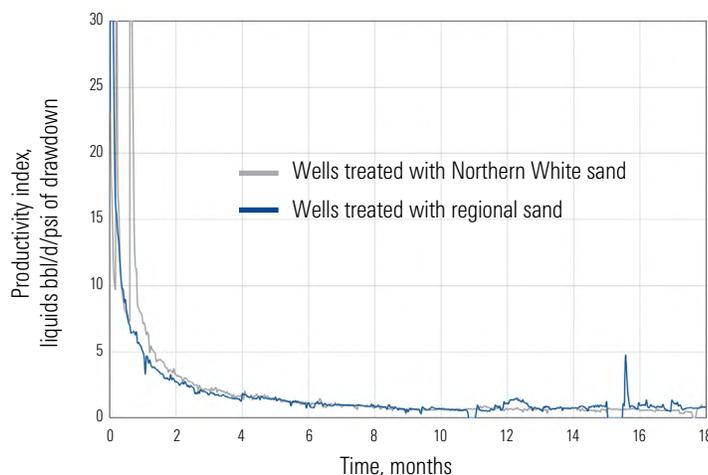
Wisconsin Proppants recommended high-quality regional sand from its Permian Basin mines based on testing that demonstrated its crush strength, sieve, and turbidity.

Head-to-head study sees nearly identical production

Patriot Resources used 100-mesh and 40/70-mesh regional sand from Wisconsin Proppants in three wells producing from the Wolfcamp B bench. The average oil production performance of those wells was compared with the average performance from five comparable offset wells that were stimulated using only Northern White sand.

The PI values were nearly identical during the initial production period. As a result of the economic improvement, Patriot Resources plans to use regional proppant in future Delaware Basin wells.

For more detail of the study, see SPE-196048.



Productivity index values are nearly identical for Patriot Resources' Permian Basin wells treated using Northern White sand or high-quality regional sand.