

# SPM™ EDGEX™ VALVE & CARBIDE SEAT

## 515 Hours of Seat Life and Doubled Valve Life in Western Canada

### AT A GLANCE

- Increases seat life by 6X and valve life by 2X compared to conventional seats and valves
- Replaceable in the field
- Compatible with any tapered fluid end
- Resists shattering
- Improves safety
- Reduces NPT

### THE FACTS

- 540% increase in seat life
- 100% increase in valve life
- -20° C to -4° C operating conditions



### THE INNOVATION

An oilfield services provider in Western Canada subjects its frac equipment to some of the most challenging conditions found in the industry. It routinely pumps high volumes of proppant at pressures up to 12,500 psi during harsh winter operations (-20°C | -4°F). Standard seats typically have an average life of 80 hours. During a three-month field trial with the SPM™ EdgeX Valve and Carbide Seat, the engineered seats ran a record-breaking 515 hours—a 540% increase compared to previous seats—and valve life doubled compared to previous valves, dramatically increasing safety and reducing nonproductive time (NPT).

### THE CHALLENGE

The Montney and Duvernay plays in Canada subject hydraulic fracturing equipment to some of the most challenge facing environments there are due to high pressures, high proppant volumes and the extremely cold temperatures, which can range -5 to -15°C (23 to -4°F) in the winter. These are unforgiving conditions that prevent the use of less durable frac equipment and components.

An oilfield services provider operates pumps in both shale plays and wanted to carve out greater efficiencies to further streamline their multi-well pad operations and reduce their non-productive time (NPT). Pulling valves and seats is the most labor-intensive part of fluid-end maintenance, increasing NPT when fluid ends are offline. While 80 hours is a typical life span, the company was eager to extend maintenance intervals and wanted to eliminate seat replacement and maintenance on the pad.

Pumping 2°C (36°F) water in -20°C (-4°F) weather has been known to cause tungsten carbide fluid-end seats to become brittle or shatter, increasing consumables and labor costs. Additionally, the oilfield service provider pumped 5,000 tons of sand rather than the typical 1,200–1,400 tons of sand used in offset wells, subjecting their seats and valves to significantly more erosion.

## THE APPROACH

SPM Oil & Gas proposed a three-month field comparison, monitoring the SPM EdgeX Carbide Seats and EdgeX Valves to track their performance against conventional pump expendables on a single pump. The operating conditions of the frac sites where the test occurred were 12,500 psi, 350 tons of sand/stage, produced water, 100 bpm, and temperatures well below freezing (–20°C | –4°F). The SPM Edge Engineering Field Assist Team supervised the test, checking sets at regular maintenance intervals and comparing them for wear.

## THE RESULT

The SPM EdgeX Carbide Seat produced dramatic results for the oilfield services provider. Unlike tungsten carbide seats which can become brittle or shatter due to cold weather, the SPM EdgeX Carbide Seats' performance was unaffected by the cold temperatures and lasted 6x longer than the previously used seats.

The company ran the SPM EdgeX Carbide Seats a record-breaking 515 hours compared to the 80-hour average lifespan of conventional seats—increasing seat life approximately 540%. In fact, the operator finished the job before the seats could be run to failure, which gave the crew confidence that the new SPM EdgeX Carbide Seats may last even longer.

Additionally, the SPM EdgeX Valves lasted 120 hours. This is a 100% increase in valve life, as the previously used valves lasted 60 hours.

Based on this successful field trial, the operator immediately ordered SPM EdgeX Carbide Seats and EdgeX Valves to outfit their fleet. The SPM EdgeX Carbide Seat and EdgeX Valve eliminated the need to pull seats on site, leading to longer pumping time, reduced maintenance, and increased satisfaction.

## THE SOLUTION

SPM Oil & Gas' patented SPM EdgeX Carbide Seat and EdgeX Valve set a new industry standard by increasing seat life six times compared to conventional seats, which typically last an average of 80 hours, and doubling frac valve seat life compared to conventional valves. It is a timely solution for operators focused on pump utilization and reducing downtime for pump maintenance. Engineered with the entire frac site in mind, the SPM EdgeX Carbide Seat and EdgeX Valve enable operators to push their frac fleets harder while significantly reducing maintenance time and costs for seats and valves. This dramatic increase in longevity enables operators to reduce the amount of time pulling seats on site while reducing expenses for a costly consumable.

The SPM EdgeX Carbide Seat offers greater resistance to wear, cracking and washout, even with large particles. It fits any standard taper fluid end and eliminates sensitivity to installation errors due to its strategic design and placement of tungsten carbide and steel. Additionally, it can be replaced in the field with standard tooling.

The SPM EdgeX Valve features a patented and proprietary engineered design that optimizes its performance when used with the SPM EdgeX Carbide Seat to wear deeper and last twice as long as standard valves without failure risk. Its material and heat-treated combination provides exceptional erosion resistance and durability as well as high sand abrasion resistance with every stroke. Its standard 30° strike angle maximizes interchangeability, and its unique leg design ensures stability through all operating conditions – including high lift.