

FRACTAL SYSTEMS CONFIRMS ENHANCED JET SHEAR™ READY FOR COMMERCIAL DEPLOYMENT

Successful Conclusion of Large-Scale Demonstration

February 6, 2018 (Calgary, Alberta) – Fractal Systems Inc. (“Fractal”), a privately-owned technology company engaged in the business of developing proprietary partial upgrading technology solutions for producers and mid-stream companies, today announced it has successfully completed the large-scale demonstration of its Enhanced JetShear technology with a major oil sands producer proving its ability to dramatically lower the viscosity of bitumen, improve netbacks, increase bitumen volumes shipped in existing pipelines and improve overall greenhouse gas performance. Fractal is now focused on deploying the technology on a commercial scale, adjacent to Steam Assisted Gravity Drainage (“SAGD”) facilities and pipeline terminals.

Since the mid-2000s, Fractal has been advancing the development of its proprietary and patented JetShear technology to provide heavy oil and bitumen producers cost-effective solutions to improve margins, de-bottle infrastructure and provide flexibility associated with the transportation of heavy oil. During 2013, Fractal entered into technology and testing agreements with a large Canadian oil sands producer, and in May of 2014, the parties commenced testing diluted bitumen at Fractal’s 1,000 barrels per day JetShear demonstration facility located near Provost, Alberta (the “Facility”), using commercial-scale JetShear components.

On February 16, 2015, Sustainable Development Technology Canada (“SDTC”) awarded Fractal and its producing partner funding in the amount of \$3.7 million to conduct field trials of the newly developed Enhanced JetShear and Acid Reduction Process™ (“ARP™”) technologies. Building on the successful demonstration of the JetShear technology platform that concluded in April of 2015, Fractal commenced engineering for a retrofit and expansion of the JetShear facility. Construction on the retrofit was completed in the first half of 2016 and the Facility operated from late August 2016 through August 2017.

During the operating periods, the Facility processed over 225,000 barrels of partially-diluted bitumen that was trucked to the site from Fractal’s producing partner’s SAGD projects. The Facility achieved up to 53% diluent displacement, reduced the TAN by at least 60%¹ to below industry thresholds while maintaining the olefinic content of the crude below the detection limit (0.50% by weight).

“We are very pleased with the successful outcome of this demonstration and by the performance of the Facility,” said Ed Veith, President and COO of Fractal. “Improving the overall economic and environmental sustainability of bitumen production is vitally important to the industry, provincial and federal governments and other stakeholders. Broad application of innovative technology solutions, like the

¹ The Total Acid Number (“TAN”) of the diluted bitumen (“Dilbit”) was reduced by at least 60% to well below a TAN level equal to 1 mg KOH/gr or one milligram of potassium hydroxide (KOH) per gram of oil sample.



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JetShear technology platform, supports Alberta's Climate Leadership Plan by reducing overall GHG emissions, and will allow the industry to continuously improve and ultimately benefit all Canadians."

The key objectives for the large-scale demonstration that were met or exceeded, include:

- 1) Ensuring facility operability and throughput expectations with no recordable safety or environmental incidents;
- 2) Meeting processing objectives using Enhanced JetShear while maintaining 100% volumetric yield and reaching pipeline transportation specifications for viscosity and density with a 50% or greater reduction in required diluent; and
- 3) Achieving ambitious product quality targets (olefin content, acidity, diluent displacement, and product stability).

Fractal is now supporting site-specific engineering and other studies which will be used in both the regulatory process and a sanctioning decision for the construction of a commercial-scale facility.

About Fractal:

Fractal Systems Inc. is a private Canadian technology company focused on the advancement of innovative technology solutions for partially upgrading heavy-oil and bitumen. Fractal's technologies will enable oil sands companies to reduce their environmental impact while realizing significant operating and transportation cost advantages over existing upgrading alternatives. Fractal's current technology platform includes JetShear™, Enhanced JetShear™ and Acid Reduction Process™, which have concluded field testing and are ready for commercial deployment with oil producers and midstream companies. Fractal has offices in Calgary, Alberta and Sherbrooke, Quebec.

The Jetshear technology platform is designed to significantly reduce the cost of transporting bitumen and extra-heavy oil and improve the price received for the product by reducing the TAN; improve bitumen export pipeline utilization leading to a 20 to 25% increase in export capacity; and reduce the green house gas footprint compared to the status quo of shipping conventional dilbit.

New technologies and approaches will be required to manage sustainable growth in the oil sands for the benefit of Canada, North America and the world. Fractal's Jetshear technology platform can play a vital role in improving producer operating margins while also improving the green house gas footprint and long-term sustainability of the oil sands.

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