



## At the Leading Edge of Next-Generation Oil & Gas Technology

Since 1979, SRC's Energy Division has been instrumental in transforming some of the world's most challenging oil and gas opportunities into some of its most valuable reserves. We are now a full generation into our mission to support and sustain our clients with world-class technology, services and solutions. In conjunction with our global client base, we are already developing and pioneering the next generation of oil and gas technology.

SRC's Energy Division offers state-of-the-art research, development and demonstration (RD&D) laboratories and engineering facilities in Regina, Saskatchewan. Our teams of expert engineers, scientists and technologists offer deep experience in, and insight into, the varied resources of the vast Western Canadian Sedimentary Basin (WCSB), including bitumen, light to heavy oil, and shale oil and gas.

We are also able to draw on the full array of SRC expertise and facilities, in particular the acclaimed Pipe Flow Technology Centre™ in Saskatoon. We put our extensive know-how to work tackling the needs of national and multinational clients, both in Canada and globally.



### ***SRC Success Story: CO<sub>2</sub> Flooding***

Since the 1990s, SRC has been at the forefront of advancing CO<sub>2</sub> injection processes, starting with light oil fields in southeast Saskatchewan. When our clients decided to "go big" with billion-dollar plus CO<sub>2</sub> floods in the area, our R&D results underpinned the technical design of those ventures. We contributed expertise to the groundbreaking IEA-GHG Weyburn–Midale CO<sub>2</sub> Monitoring and Storage Project. Today, we continue at the leading edge of CO<sub>2</sub> EOR, helping our clients to apply both CO<sub>2</sub> and natural gas injection to enhance recovery of light to heavy oils and "tight" Bakken-like oil.

## World-Class Oil and Gas Capabilities

Whether our clients are junior start-ups or multinational giants, we strive to provide practical and inventive solutions to their current and future needs, from rapid oil and gas evaluation and services to multi-year research and feasibility studies.

## Our Strengths in Research and Innovation

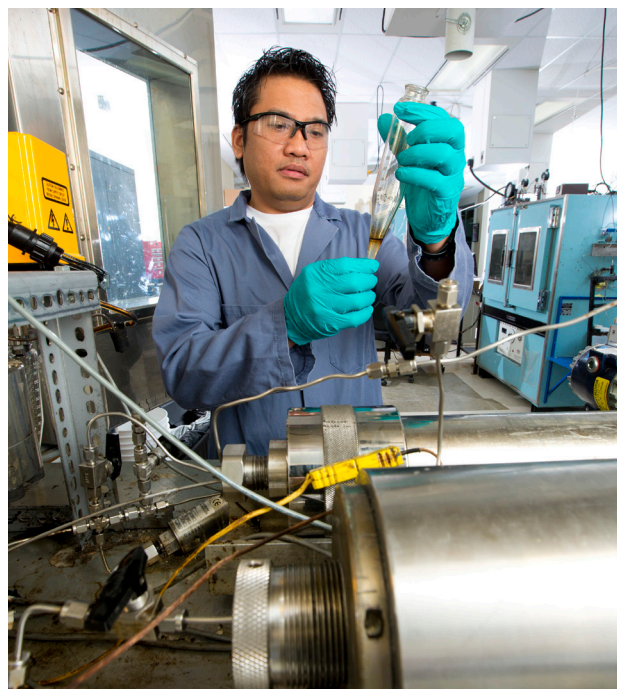
- We're advancing enhanced oil recovery (EOR) for the varied resource types present in the WCSB: heavy oil and oilsands bitumen, medium/light oil, tight Bakken-like reservoirs, heavy oil carbonates and shale oil.
- Our core areas of EOR expertise lie in thermal EOR, post-cold-production EOR, chemical waterflooding, miscible/immiscible gas (CO<sub>2</sub>) injection, microbial EOR, in-situ combustion, and original hybrid EOR systems such as solvent/thermal and chemical/CO<sub>2</sub>.
- We study improved methods to handle produced fluids, with expertise in areas such as surface facility energy efficiency and integration, water cleanup and water compatibility, and complex multi-phase pipe flow technology.
- Our dedicated, state of the art equipped laboratories include full-service analytical suites as well as some custom-designed and -built models and instruments that are ahead of the curve. For example, we use our hybrid high-temperature solvent vapour extraction scaled physical model to study complex SAGD and SVX techniques.

## Our Strengths in Numerical Modelling

- Our researchers have detailed knowledge/experience in numerical modelling and simulation of EOR processes, using commercial software suites or custom-built solutions. Our team customizes existing modelling platforms, developing new methodologies for effective simulation of complex systems, including SAGD, SAGD hybrids, in-situ combustion and complex CO<sub>2</sub> chemical flooding.

## Our Strengths in Prototyping and Piloting

- SRC's Energy Division can take new and existing EOR techniques from concept to field deployment through feasibility studies using small and large-scale physical models and numerical simulation. We employ our design and engineering expertise to develop, build and operate complex pilots and prototypes of new technological solutions.



### ***SRC Success Story: SVX Modelling***

Solvent vapour extraction (SVX) is less input- and energy-intensive than thermal heavy oil recovery methods. It's also better suited to the thin pay zones so common in the WCSB. SRC was a key research partner in the JIVE Program (2007 to 2010), which meshed laboratory studies and numerical and physical modelling with three industry SVX field pilots near Lloydminster, SK. To continue stretching the potential of this technology, SRC commissioned a large scaled physical SVX model that can be operated in cold or thermal hybrid modes, with varied wellbore geometries, and with field-like pay depths.