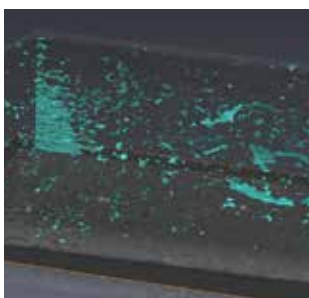


# Heavy Oil Research Network (HORNET)



## HEAVY OIL RESEARCH NETWORK (HORNET)

The PTRC's Heavy Oil Research Network (HORNET) builds on over 20 years of demonstration field trials and research results by one of the world's leading enhanced oil recovery (EOR) organizations.



## PILOT INNOVATIVE TECHNOLOGIES AND CONDUCT R&D THROUGH LEVERAGED GOVERNMENT FUNDING

The HORNET program leverages funding from different levels of government (including the Government of Canada and Innovation Saskatchewan) with industry participation to conduct field trials and R&D in key areas that will improve recovery rates in heavy oil reservoirs. Low recovery is a global problem for heavy oil but is of particular concern for Western Canadian reservoirs, which produce significant amounts of sand during production that reduces reservoir pressures.

The structure of HORNET means that, for a minimal investment, industry is given equal access to millions of dollars in research results per year. Paid sponsors directly

shape the research program by participating in the Technical Advisory Group, which reviews all projects submitted during the program's request-for-proposals process.

## TARGETED RESEARCH DRIVEN BY INDUSTRY CHALLENGES

The HORNET program sponsors research in these key areas to improve heavy oil recovery rates:

- Cold Heavy Oil Production with Sand (CHOPS) and post-CHOPS
- Solvent use (including CO<sub>2</sub>-EOR)
- Waterflood and chemical flood optimization
- Development of surfactants, polymers and alkalis for enhanced recovery
- Improvement and optimization of thermal technologies such as steam-assisted gravity drainage (SAGD)
- Reservoir characterization including computer modelling of wormholes for better EOR

HORNET's lab and bench-scale focus is to move technological innovation quickly to field application. Field trial consortia are being proposed to deploy new solvent recovery and surfactant technologies,

building on the knowledge gained from PTRC's former solvent field trials. HORNET research providers include scientists from the Saskatchewan Research Council's Energy Division, the University of Regina's Petroleum Engineering Department, and the University of Saskatchewan. Collaborative research is encouraged with researchers at institutions worldwide.

## HORNET'S LIBRARY OF RESEARCH RESULTS

Enhanced oil recovery research sponsored by the PTRC has led to an extensive library of research papers. This library, which includes research conducted from 2000 to present, is a rich resource of enhanced oil recovery data and results. The databases managed by PTRC also include a link to hundreds of research papers that have been presented at the International Energy Agency Enhanced Oil Recovery's Annual Symposiums. Passwords to some of these materials are available from PTRC, with some results requiring sponsorship for access. Please contact PTRC if you have any queries.

The PTRC libraries are located at <https://steps.ptrc.ca/>



# Light and Tight Oil



## LIGHT & TIGHT OIL

The Petroleum Technology Research Centre is a not-for-profit company committed to R&D and field trials of innovative technologies to improve the efficiency and recovery rates of Canada's oil reserves. PTRC operates by leveraging government funding with industry (in-kind and cash) support, to develop research and field trials that directly address the most pressing challenges facing operators.

The Bakken and other tight hydrocarbon plays in Saskatchewan, Alberta, Manitoba, Montana and North Dakota are increasingly important for Canadian and North American energy self-sufficiency. The PTRC's

tight oil research and field trial program is seeking industry partners with an interest in developing innovative processes and technologies for demonstration.

Tight oil plays like the Bakken and the Viking formation (in southwestern Saskatchewan) also carry significant technological challenges, especially very steep declines in production and low recovery rates. PTRC is directing an industry-driven research program including field trials that will address the most pressing challenges facing producers.

## PROPOSED AREAS OF RESEARCH

The PTRC's tight oil program is examining a number of potential demonstration and R&D projects:

- In the Bakken: CO<sub>2</sub> enhanced oil recovery trials examining how hydraulically fractured wells respond to CO<sub>2</sub> utilization.
- In the Viking: Surfactant development and modification, moving to field trials to improve recovery rates from declining wells.

- Alkali utilization to promote in-situ surfactant formation and interfacial tension reduction to achieve higher reservoir sweep efficiency.

## LEVERAGING RESEARCH DOLLARS AND FACILITIES

The PTRC receives funding from Innovation Saskatchewan to develop tight oil R&D and demonstration projects. \$500,000 in leverageable funds are currently available, in addition to PTRC's access to Government of Canada programs on behalf of industry partners.

PTRC works with a network of leading researchers from universities, the Saskatchewan Research Council and international research providers, to develop bench-scale and laboratory testing to optimize field demonstrations. Western Economic Diversification recently provided funding to PTRC for the installation of a high-resolution North Star Imaging X5000™ industrial X-ray CT-scanner at the Saskatchewan Research Council's Energy Division Lab. Starting in 2018, this equipment will be used to provide images of Bakken and other tight formation core samples at the micropore level.

