ALBERTA INNOVATES

CLEAN RESOURCES

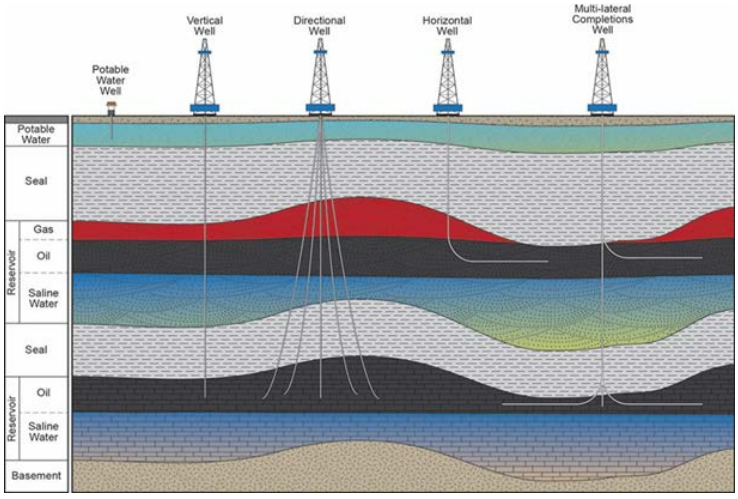
ADVANCED HYDROCARBONS

CLEANER HYDROCARBON PRODUCTION - RECOVERY TECHNOLOGIES

FUNDING DETAILS

Multilateral Horizontal Wellbore Junction Testing and Demonstrations for Permanent and Scalable Methane Emissions Reductions

Modern Wellbore is developing a downhole tool for the oil and gas industry that will allow high pressure isolation during fracturing operations between multiple horizontal well segments that are all drilled from the same vertical hole. In this project, the tool is being designed and bench tested. The successful prototyping and testing of the MJT tool would result in a commercial prototype (TRL 6) that would enable Modern to enter into a field test program with Seven Generations Energy. Seven Generations Energy is Modern's commercial project partner in developing the novel MJT tool, providing design input, test criteria, tool specifications and has committed to providing commercial wells for final implementation.



RECIPIENT:
Modern Wellbore

PARTNERS:
7 Generations
Argus Machine

TOTAL BUDGET:
$2,900,000

AI FUNDING:
$950,000

PROJECT DATES:
MAR 2018 - APR 2019

PROJECT TRL:
Start: 5
End:7

APPLICATION

Modern's MJT tool design allows high pressure fracturing of multiple, independent lateral legs in same vertical well using standard fracturing technologies. The advantage of using the MJT tool is that the production from one multilateral well can be equivalent to multiple conventional wells, with a significantly smaller surface facility footprint. The reduction of surface facility requirements in a commercial implementation of Modern's MJT tool would directly reduce fugitive methane emissions over the complete life cycle of drilling, completions and production as well as significantly improve the economic efficiency of shale resource production.

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PROJECT GOALS

- Validate the potential GHG emissions reductions from a MJT tool that meets performance criteria with reductions of 20% per barrel equivalent in the base case.
- Validate the potential environmental benefits from a MJT tool that meets performance criteria such as lower volumes of materials (pipe, cement etc.) from a reduction in surface facilities, wellheads and tie-in piping from additional wells and a reduction in total meters drilled per effective production length.
- Validate the potential economic benefits from a MJT tool that meets performance criteria such as reductions in CAPEX and OPEX for fractured multilateral wells to allow for additional shale and tight oil and gas resources to be developed.

BENEFITS TO ALBERTA

- Reductions in CAPEX/OPEX for fractured multilateral wells could allow for additional shale and tight oil and gas resources to be economically developed, increasing revenue and growth.
- The partnership between Modern and Argus Machine ensures that commercial tools will be manufactured in Alberta, supporting job growth; Argus currently employs 175 workers.
- Commercial users of the MJT technology have the potential to be industry leaders in low cost production, improving profitability and potentially attracting global investment.
- The successful development and manufacturing of this tool supports local technology and expertise as Modern expects to become a global supplier based in Alberta; i.e. over 100,000 wells are drilled annually and up to 95% in the United States are fracked – at 10% market penetration, annual revenue would exceed $2B.

1 New Products/Services

1-10 Project Jobs

11-100 Future Jobs

5 Patents

Indirect Project GHGs

100-1000 kT/yr Future GHGs Reduced

CURRENT STATUS

MAY 2019

Modern Wellbore completed the engineering, design, prototyping, and testing of a multilateral junction tool and auxiliary components. An initial prototype was manufactured, and the junction tool was bench tested accomplishing the proof of concept of the multilateral technology. Modern is moving towards additional prototyping (localized tool design improvements) to achieve a field-ready prototype design (Phase 2) which will move towards testing by Seven Generations in the field.