



AAPG

Research LAUNCHER Program

About You

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Company/University: Liferview Oil and Gas Management Services

Check which apply to you: Student Non Student Independent Researcher Professor Corporate Research Other

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Short Bio: (250 words or less)

Liferview Oil and Gas have developed a new enhanced recovery process for oil, and in particular, heavy oil, where heated gas is circulated within a borehole with stimulation by flashing a liquid to a gas leading to a repeated pressure pulse that impacts the reservoir. To flash the liquid, energy is provided by the heated gas. In other embodiments of the process, the heated gas, which can be an exhaust gas containing carbon dioxide or synthesis gas, can be injected into the formation to reduce the viscosity of the oil which in turn enables its mobilization and production from the reservoir. The liquid that is flashed repeatedly to create the pressure pulsing component of the process can be water or peroxide (to generate hydrogen).

Pulse Resonance Thermal Injected Syngas Process (PRTISP) is one embodiment of Liferview's recovery process where the heated gas is a synthesis gas and the frequency of the pulses may be at the resonant frequency of the oil formation. The preferred well configuration is a toe-to-heel configuration where vertical or horizontal injection wells are used with horizontal production wells. Catalytic upgrading of the oil may be achieved by injecting a catalyst solution into the injection well.

At the resonant frequency, the maximum amplitude of pressure pulses within the formation is achieved. Liferview's process also constrains the injection pressure of the fluid to be lower than the fracture pressure of the formation.

Liferview Oil and Gas will be conducting a series of PRTISP laboratory experiments to test different well and operating scenarios.

Project Description

1. Name of project: Liferview's PRTISP, (Pulse Resonance Thermal Injected Syngas Process)

2. Brief synopsis/areas of geosciences or engineering (50-75 words)

PRTISP, is a combination of 4(four) existing heavy oil recovery processes: 1) steam flooding, 2) gas injection, 3) pulse technology and 4) toe-to-heel (TTH)/ inverted 5 spot short distance oil displacement (SDOD) process. Each of the processes is either currently being used commercially or validated fully (or to some extent) and separately. Liferview believes any of these four processes, if applied individually and separately, constrains optimized oil recovery, while the combination of these processes, if integrated properly and applied effectively, could accelerate fluid flow in porous media and increase oil recovery significantly.

3. Bullet list of 5-7 main outcomes/goals.

- Preliminary Feasibility study for the application of this technology based on reservoir parameters, viscosity and permeability.
- To conduct a model simulation of an existing reservoir for the purpose to:
 - compare the possible increase in oil production, conducting geomechanical engineering assessments by comparing our technology with other possible new or existing technologies,
 - provide geological data to provide accurate reservoir data and
 - provide programming requirements to make changes for optimal production.
- Conduct laboratory testing based on the trigger indicators on the reservoir response for optimal production response of which will consist of 10 tests, five tests will be conducted using an inverted 5 spot well configuration, and 5 using the toe to heel configuration.

4. In two or three sentences, describe why your research is important. Please mention who will benefit from your work.

The focus on this research is to develop an optimal process for oil production by increasing oil recovery using green technology. This technology has the ability to benefit both oil companies and increase tax generating revenue to government agencies.

5. Timeline with milestones (12 month/18 month):

Our objective is to have the laboratory testing completed within the 12 month period and use the results in the reservoir modelling simulation to develop optimal operational parameters for both pulsation duration, frequency and effect along with chemical interaction within the reservoir. Completion of the research gathering should be completed within the 18 month period based on funding and the final abstract should be read for publication with a 24 month period.

6. Funding amount needed to achieve first basic goals within 12 months. Please provide a brief summary overview of your budget. List costs of 5-10 main items.

Estimated cost for the first 12 months is 482,000.00. 5,000.00 for the preliminary feasibility study of which should be conducted within a month of the approval, the majority of this cost is research space, (university) development of the laboratory testing chamber, Graduate student stipend, researcher stipend, chamber medium, electrical and instrumentation.

7. In the process of gaining background knowledge in the field of your proposed research, who did you find to be the top two or three researchers? What are the main concepts that are being explored? Please briefly describe.

Dr. Alex Turta: a research engineer at the Alberta Research Council. He is a reservoir engineer with a Ph.D. in thermal methods of heavy oil recovery. Since 1992, Alex has been part of the "split-team", which has continuously worked on both sides of the Atlantic, to develop novel in-situ combustion (ISC) processes for heavy oil recovery, namely Toe-To-Heel Air Injection (THAITM) and its version for in-situ upgrading, CAPRITM; both processes are under field testing in Canada. Since 1996 Alex has also been instrumental in developing the Toe-To-Heel Waterflooding (TTHW) process, which is now under field testing in Canada and USA. Alex was involved in the design of several projects of miscible CO2 flooding for light oils and in the monitoring/evaluation of a CO2 injection project in an intermediate viscosity oil field. He was instrumental in the selection of the 71 prospective Alberta oil reservoirs for CO2-EOR and CO2 storage, using the ARC software Select EOR. For the last 6 years, he has been the project leader of the ongoing project on flue gas and CO2-Enhanced Gas Recovery (EGR) and CO2 storage in gas pools

Dr. Kenny Adegbesan, Dedicated reservoir engineer with over 25 years of experience in the Alberta oil and gas industry. Has extensive technical knowledge in conventional oil, gas and heavy oil recovery. Conducted reservoir studies in numerous carbonate and sandstone reservoirs. He is recognized in the oil and gas industry for technical expertise in horizontal well technology applications, thermal recovery of heavy oil/oil sands and EOR, practical reservoir engineering and reservoir simulation.

8. Please provide a photo of yourself and a photo related to your proposed project. It will be very helpful in publicizing your project and potentially securing funding.

9. Who will benefit? Any country with heavy oil reserves, counties with depleting oil production, all oil firms through the world.

AAPG Research LAUNCHER supporters receive

The opportunity to work directly with you and receive reports, information, and findings, depending on the level of support.

The Deal

The researcher agrees to:



- ❖ Develop a brief public presentation on the research to be made available to AAPG
- ❖ Share an annotated bibliography and review of relevant published articles
- ❖ Present research findings on project at an AAPG Forum, GTW, or Research Symposium
- ❖ Write a detailed report on the results of your research to be made available to LAUNCHER supporters
- ❖ Write an extended abstract on the results of your research to be made available to AAPG

Thank you for submitting your research proposal to the AAPG Research LAUNCHER Program. Your proposal will be reviewed and upon acceptance you will be contacted by AAPG Education/Research. If your proposal is accepted, we will publicize your proposal and encourage funders to contact you directly. AAPG does not guarantee funds nor have any connection with the success or failure of the endeavor. The goal is to support scientific research in the petroleum geosciences and engineering and launch the next generation of geological advances.

HAROLD JOHN NIKIPELO JUNE 11, 2014
 Research Candidate (print) Date

 AAPG Education/Research (print) Date

 _____ June 11/2014
 Research Candidate (sign) Date

 AAPG Education/Research (sign) Date

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