Alberta
Upstream Petroleum Research

PTAC PETROLEUM TECHNOLOGY ALLIANCE CANADA

Project Summary, Milestones, Payment Schedule and Quarterly Update Reports

Report Date (Q1 January – March 2024)

Project Summary

Project Title:	EcoSeis Phase 2
Lead Investigator:	Andrea Crook
AUPRF Managed Funds Award Amount:	$300,000
PTAC Technical Champion:	Lori Neufeld
GL #:	AUPRF2022 – 000112
Other Funding Amounts and Sources:	$6,804,041.00
Start Date:	February 1, 2022
Completion Date:	March 31, 2024
Final Report Due Date:	April 30, 2024

Provide a brief description of the challenges this project aims to address and how industry and others will benefit, including what the anticipated impact is. (i.e., cost reductions, improved environmental performance, impact on regulation, enhanced access to resources). (Maximum 150 words or less)

1. Original documentation of scope and key questions
2. Reference to knowledge gap analysis

Eco-Seis is a methodology to reduce the amount of line clearing and associated GHG emissions on seismic programs by 30-50%. The successful implementation of this technology or use of the knowledge generated could result in:

- Reductions of 30-50% in the amount of tree cutting on seismic programs in Alberta
- Reductions in the amount of GHG generated during seismic operations due to limiting the number of trees cut
- Protection of sensitive habitats by avoiding and/or limiting access to sensitive areas with high biodiversity located within the program area
- Policy development guidelines for achieving high quality subsurface seismic images while maintaining biodiversity and protecting sensitive habitats

The project will contribute to the Ecological Policy Issues and Knowledge Gaps: Habitat Restoration and Reclamation.

List key milestones with invoicing schedule.

	Milestone	Expenditures[1]	Fiscal Quarter[2]
1	**Summer 2022 Field Studies**	$125,000	Q2 2022/23
2	**Winter 2023/2024 Field Studies**	$100,000	Q4 & Q1 2023/24
3	**Summer 2024 Field Studies**	$75,000	Q1/Q2 2023/24
4			
5			
	Total	$300,000	

Quarterly Update

Exception Highlight for the Quarter:
(any exceptions to the original project scope, timelines, payment schedule OR early significant findings) – this can be left blank if no changes are needed, and do not include exceptions already reported

1. EcoSeis Phase 2 emissions analysis complete
2. Line cutting test field work delayed due to no snow / ground conditions –
3. Revised line cutting test date delayed to Winter 2025

Update on scope, key questions, gap analysis and work performed this quarter (include any requests for assistance to PTAC or the committees)

[1] All expenditures in Canadian dollars and must excludes GST and other applicable taxes
[2] Quarters are based on fiscal calendar e.g., Q3 2021/22 is Oct-Dec 2021

Regrowth Study

The regrowth study report is complete, with final review by the Joint Industry Partners (JIP) through COSIA finalized. The results are being incorporated into EcoSeis reports for all participants (including PTAC & Alberta Innovates). Afterward, a version for peer-reviewed publication will also be prepared, again with the opportunity for review by supporters of the work .

Line-cutting Test

The area for the line cutting test was selected and assessed based on imagery and ecosite mapping. The line cutting test was scheduled to mobilize to the field in February 2024, and all preparations were ready between OptiSeis, Swamp Donkey and the host operator for that to happen. However, due to an unseasonably warm winter, no snow was on the ground at the beginning of February and as a result, a decision was made to delay the testing to next year since the line would either be cut too low to provide useful data (some snow is necessary to increase the height of stems), or if cut high enough to generate larger stems for regrowth comparison, would have represented a safety risk for line travel after mulching. It was felt that proceeding under non-optimal conditions would potentially bias the test against the alternative cutting methods being evaluated and that it would be best to delay. Nonetheless, the detailed planning included the input from several key reviews with the major parties (see attachment). The test will need to be moved to an alternate location nearby to seismic operations underway at that time, but the structure and concept of the test is now laid out and ready to apply to any boreal forest area. Given the delays additional funding will be needed to finalize and conduct the test next season. If received, there may be an opportunity to survey the new cutting test location during the growing season in Q2/Q3 2024 prior to any cutting, which would assist with future comparisons.

Emissions Tracking

Comprehensive analysis of emissions reductions with EcoSeis was undertaken and carbon emissions modeling is now complete. The modeling utilized data acquired in the EcoSeis Phase 2 field demonstration as well as the results of the regrowth study. Separate algorithms for calculating emissions from line clearing, fuel use, and increased methane from peatlands were developed. Since the lines were pre-existing and shared between the conventional and EcoSeis surveys, a model survey was created assuming a new project done either conventionally or with EcoSeis. Applying the method shows that the largest emissions source by almost two orders of magnitude is the net loss of ecosystem carbon from line clearing, emphasizing the importance of methods that dramatically reduced line clearing like EcoSeis. Savings in the EcoSeis case for land use are estimated at 46%, and emissions savings are estimated to be around 36-50%, depending on line widths, equipment chosen and line design choices. Results have been incorporated into OptiSeis software for designing EcoSeis programs.

EcoSeis

Preparation of the final report is underway and will be completed by June 30th, 2024, after review with the COSIA JIP.

Budget Summary Update

Revenues and Expenditures	Total Budget	Budget to date	Project charges this quarter	Project charges to date	Variance of budget to actuals to date	Forecasted Total Project (no. of quarters of actual plus	Variance of total budget to forecast
Funds received And from whom	$300,000	$300,000	$46,690.39 (max that can be claimed)	$317,296.27	$17,296.27	$300,000	Note that the costs for the environmental work are greater than the funds received from PTAC. OptiSeis is only claiming what is possible given the $300,000 maximum contribution from PTAC.
Expenses							
In-Kind							

TOTAL PROJECT VALUE $6,804,041.00 _____
(Value equals the total funds committed ~~to date~~ for all years)

1st Year Funding (to March 31st, 2023) $3,591,735.67

Confirmed Funders:					
NRCan-IRAP	$381,518.80	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$832,554.86	AUPRF	$134,114.11
MITAC	$	AMEP	$	Other – Alberta Innovates JIP OptiSeis	$335,000.00 $1,654,954.03 $253,593.87

2nd Year Funding (to March 31st, 2024) $2,383,083.97

Confirmed Funders:					
NRCan-IRAP	$132,738.54	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN*	$1,628,332.20	AUPRF	$119,195.50

MITAC	$	AMEP	$	Other– Alberta Innovates JIP OptiSeis	$150,000 $352,817.73

3rd Year Funding (to March 31st, 2025) $1,491,825.07

Confirmed Funders:					
NRCan	$	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$1,249,137.94	AUPRF	$46,690.39
MITAC	$	AMEP	$	Other– Alberta Innovates JIP OptiSeis	$15,000.00 $117,264.20 $63,732.54