Development & Automation of Aerial Analytics Tools for Remotely Measuring Reclamation Success & Landslide Susceptibility in North Dakota

Submitted by:

SolSpec., Inc.

❑ **Total Funding Request - $252,385**
   Total Project Costs - $504,770
   Project Duration: 16 months

Project Description

- If remote sensing technologies are to perform to the optimal benefit of North Dakota's oil and gas industry, big data collected in the field must be transformed into decision tools at the desktop. The transformation process that turns remotely sensed data into actionable intelligence requires efficient, scalable, and statistically robust methods and infrastructure. These needs for the basis of the project proposed herein. This project seeks to develop, validate, and automate aerial analytics tools that empower operators and agencies with the best available technology and information needed to improve efficiencies, reduce costs, and ensure the safety and sustainability of oil and gas operations in North Dakota. To fulfill this goal the project holds three objectives:

Project Description

1. Reclamation. Build upon the findings of OGRC Project G-037-73 (2016) to develop and validate efficient, proven, and scalable metrics for remotely measuring the success of well site reclamation.

2. Landslides. Build upon proven models for assessing geologic hazards to pipelines in the Marcelus Shale region to develop and validate landslide susceptibility and threat models specific to the Bakken Shale region of North Dakota.

3. Automation. Automate the above aerial analytics tools within a secure, open source, web-based platform in which oil and gas operators and agencies can easily upload, manage, process, analyze, visualize, and download aerially-derived information and reports for use in decision making.

TECHNICAL REVIEWERS' RATING SUMMARY

Statement	Weighting Factor	Technical Reviewer G-49-04A	Technical Reviewer G-49-04B	Technical Reviewer G-49-04C	Average Weighted Score
Objectives	9	4	5	3	36
Achievability	7	2	4	4	21
Methodology	8	4	4	4	32
Contribution	8	4	4	4	32
Awareness / Background	5	4	5	3	20
Project Management	3	4	4	4	12
Equipment / Facilities	2	4	4	3	6
Value / Industry-Budget	4	4	4	3	12
Financial Match – Budget	4	4	4	3	12
Average Weighted Score		182	214	176	190
Maximum Weighted Score				**250 possible points**	

Technical Reviewer Totals

- G-49-04A

Average Weighted Score: **182 out of 250**

FUND

- G-49-04B

Average Weighted Score: **214 out of 250**

FUND

- G-49-04C

Average Weighted Score: **176 out of 250**

FUND

Technical Reviewer Comments

Reviewer G-49-04A

Over the last several years, it has been proven that UAS can be very effective platform for data collection to address a number of oilfield applications. While an effective data collection tool, the one major hurdle facing large scale UAS deployment is the management and processing of large data sets in an efficient manner. The applicant is confronting this challenge and is proposing to develop a tested/validated model for both industry and regulators. If successful, such a model could be a very important step for both the petroleum and UAS industries. One significant concern is the aggressive timeline (sixteen months) for new data collection, model development, testing, and refinement. Additionally, it would be good to know how many updates/modifications to the model would be handled after development.

Recommendation: Fund

Reviewer G-49-04B

High quality proposal with a logical scope of work. The budget request is not exorbitant. This reviewer's only critical comment is that some of the scope of work proposed is focused on potential landslide impact to pipelines. This is a flavor of pipeline leak prevention technology development that OGRC is already potentially funding under a project called "iPIPE (G046-88). OGRC will decide whether it wishes to invest in potentially-overlapping projects in this manner.

Recommendation: Fund

Reviewer G-49-04C

This project identifies and provides a solution to the pinch point with employing remote sensing technology. The ability to process very large data into a useable form is a limiting factor. This, with a region-specific model, makes this a unique/beneficial project. If this project is successful it will allow many users in Government and Industry to make more informed decisions. My overall recommendation is to fund the project. I do wish the applicant would have provided a little more color to the budget.

Recommendation: Fund

Director's Recommendation:

If the applicant can address and satisfy the technical reviewers' questions and comments either in written form or in their presentation, my recommendation would be to:

Fund in the amount of $252,385.