Well Site Thief Hatch Methane Detectors

Submitted by:

Vareberg Engineering, Ltd./Blue Rock Solutions, LLC

- **Total Funding Request - $266,000**
  Total Project Costs - $582,000
  Project Duration: 18 months

Project Description

This project is to enhance an existing prototype methane detector that addresses the largest source of methane leaks on an oil and gas production site and incorporate it into a producer's Leak Detection and Repair (LDAR) program. The proposed project is expected to further develop and build multiple prototype methane detection devices to be used in a Pilot Program. This program will demonstrate how the devices will detect leaks and emissions at a much faster rate than traditional monitoring practices resulting in a substantial reduction of fugitive methane emissions from the production site.

Primary design and partial testing have already been done on the campus of North Dakota State University through the College of Engineering. Further design and testing, as well as fabrication of remaining prototype devices and device enclosures shall be completed in Fargo. All field testing shall be performed on an existing oil & gas production site provided by Continental Resources located near Tioga, ND. In addition to the staff of Vareberg Engineering and Blue Rock Solutions, the staff at Appareo Systems and c2renew in Fargo, as well as the ES&H staff with Continental Resources in Oklahoma City, Oklahoma will be working on this project.

TECHNICAL REVIEWERS' RATING SUMMARY

		Technical Reviewer			
Statement	**Weighting Factor**	**G-55-01A**	**G-55-01B**	**G-55-01C**	**Average Weighted Score**
Objectives	**9**	3	4	5	36
Achievability	**7**	3	4	4	21
Methodology	**8**	3	4	4	24
Contribution	**8**	2	5	5	32
Awareness / Background	**5**	4	4	2	15
Project Management	**3**	2	3	3	6
Equipment / Facilities	**2**	3	5	4	8
Value / Industry-Budget	**4**	3	4	4	12
Financial Match – Budget	**4**	2	4	3	12
Average Weighted Score		140	207	200	182
Maximum Weighted Score				**250 possible points**	

Technical Reviewer Totals

- G-55-01A

Average Weighted Score: **140 out of 250**

FUNDING TO BE CONSIDERED

- G-55-01B

Average Weighted Score: **207 out of 250**

FUND

- G-55-01C

Average Weighted Score: **200 out of 250**

FUND

Technical Reviewer Comments

Reviewer G-55-01A

As proposed, funding considerations should be cautiously considered for following reasons. I do like the mission of the application because thief hatch emissions are very real challenge for the industry. With that said, very significant reductions can be achieved by replacing, repairing, or retrofitting existing thief hatches with modern designs and the installation of existing thief hatch closure sensors. A complete thief hatch replacement/retrofit, and the benefits that would bring, would likely occur with the installation of the proposed sensors. The current design appears to share the void space in which overpressure tank gas would release to atmosphere. A design concern is that windy conditions could make reliable emission monitoring challenging and quantitative measuring attempts near impossible. With the reliability concerns noted above, numerous other potential emission locations on site, and regulatory pressure for accurate measurements, I suspect many operators will still continue to deploy camera systems for location wide monitoring. One potential option that may better warrant funding consideration is to scale down the overall scope with less sensors for the initial field testing and reporting.

Recommendation: FUNDING TO BE CONSIDERED

Technical Reviewer Comments

Reviewer G-55-01B

The proposed activity addresses a critical issue facing the oil and gas industry in ND. With success the green house gas footprint of oil and gas production could be significantly reduced both for existing and future oil and gas production in ND. This would be of significant value to ND and the oil and gas industry. With the addition of a go/no go decision point noted earlier I would strongly suggest funding for this activity.

Recommendation: FUND

Reviewer G-55-01C

More detail could have been provided in terms of milestones, Gantt charts etc. However, the equipment, installation and pilot project are simple. The timeline might be lengthened by issues with final design, or communications to the proper EHS personnel. However, the project has a high likelihood of success and for its cost, a significant impact on fugitive emissions at well sites. Reduction of fugitive emissions through faster detection, and faster response, is an area OGRC should engage as EPA and other federal agencies are very concerned and plan to implement new rules on methane in the near future.

Recommendation: FUND

Director's Recommendation:

Fund in the amount of $266,000.