

Grant Round Application for G-034-02

DIRECTOR'S COMMENTS G—034-02

The Mini-GTL Zero Flare Solution that captures 100% of Associated Gas Flaring at the Wellhead and Converts it to Biodegradable and Environmentally Safe Liquid Fuels and Chemicals

Submitted by: GasTechno Energy and Fuels (USA)

Principal Investigator: Walter Breidenstein

Request for \$600,000

Total Project Costs \$2,800,000

Duration: 36 months

Description of the Project: GEF has developed a proprietary, single-stage process for conversion of natural gas to liquids in the patented GasTechno process. The single step GasTechno process can be deployed remotely at miniature and small-scales since it eliminates the costly pretreatment, reforming and syngas steps by converting the associated gas directly into methanol and higher-value oxygenates via a patented direct partial oxidation process. GasTechno will implement a full lifecycle Zero Flare Solution that will eliminate associated gas flaring via conversion to commercially saleable liquid chemicals at the wellhead in North Dakota to meet the regulatory requirements.

SM Energy Company has provided a commitment letter to allow the project to be done on one of its sites as a pilot test.

Technical Reviewers' Comments

Reviewer G-33-03A

The proposal lacks information describing how the GTL demonstration and flex-fuel vehicle evaluation activities will be integrated and subsequent life-cycle analysis conducted. It appears that the project goals could be achieved using GasTechno's existing system, thereby substantially reducing the cost of the demonstration project.

Recommendation: Funding to be considered

Reviewer G-33-03B

Merits: Apply tested technology to on-site well application. This will expose project to the actual operating conditions. They have contacted manufactures to scale up and build the units. Good technical depth in the management team. Alliance with University of Wyoming will help with development and troubleshooting of the proposed system. Flaws: What other resources need to be available for the test? Power? Water? Storage tanks with vapor control? Oil wells do not produce gas at a steady rate. Can the design flex to this variance? Does start up/shut down require manned operation? Automation will be important to make the multiple units (future) viable.

Recommendation: Fund

Reviewer G-33-03C

If the proposed GasTechno project meets all goals, it will encourage and promote the use of a new technology for reduction of flaring that will have a positive economic and environmental impact on oil and gas exploration, development, and production in ND. A currently wasted resource could be utilized to replace ethanol in gasoline. The implementation of this technology on the scale needed to significantly reduce natural gas flaring would create an entirely new energy industry within the state. The technology also has the capability to potentially convert other methane sources to methanol, such as North Dakota's many stranded deposits of shallow biogenic methane gas, as well as methane produced from landfills.

Recommendation: Fund

Director's Recommendations:

To fund in the amount of \$350,000 with the following contingencies:

- **Written agreement with an oil producer to install at least 1 unit at one of their sites;**
- **Written agreement with natural gas liquids purchasing company;**
- **Applicant identifies and demonstrates to the Department of Mineral Resources staff that they will meet the conditions of the State's Gas Capture Order (Order #24665)**