Gas/Liquid Membranes For Natural Gas Upgrading

Quarterly Report No. 4

Reporting Period Start Date: June 1, 2002

Reporting Period End Date: September 30, 2002

Principal Author: Howard S. Meyer, Principal Manager, Gas Processing Research

GTI Project 61147

Issued: October 2002

Contract Number: DE-FC26-01NT41227

To

Anthony M. Zammerilli

Project Manager

National Energy Technology Laboratory

P.O. Box 880

3610 Collins Ferry Road

Morgantown, WV 26507

By

GAS TECHNOLOGY INSTITUTE

1700 South Mount Prospect

Des Plaines, IL 60018-1804

DISCLAIMER

ABSTRACT

Efforts this quarter have concentrated on legal agreements, including alternative field sites. Preliminary design of the bench-scale equipment continues.

TABLE OF CONTENTS

INTRODUCTION

Gas Technology Institute (GTI) is conducting this research program whose objective is to develop gas/liquid membranes for natural gas upgrading to assist DOE in achieving their goal of developing novel methods of upgrading low quality natural gas to meet pipeline specifications.

Kværner Process Systems (KPS) and W. L. Gore & Associates (GORE) gas/liquid membrane contactors are based on expanded polytetrafluoroethylene (ePTFE) membranes acting as the contacting barrier between the contaminated gas stream and the absorbing liquid. These resilient membranes provide much greater surface area for transfer than other tower internals, with packing densities five to ten times greater, resulting in equipment 50 – 70% smaller and lower weight for the same treating service.

The scope of the research program is to (1) build and install a laboratory- and a field-scale gas/liquid membrane absorber; (2) operate the units with a low quality natural gas feed stream for sufficient time to verify the simulation model of the contactors and to project membrane life in this severe service; and (3) conducted an economic evaluation, based on the data, to quantify the impact of the technology. Chevron, one of the major producers of natural gas, has offered to host the test at a gas treating plant. KPS will use their position as a recognized leader in the construction of commercial amine plants for building the unit along with GORE providing the membranes. GTI will provide operator and data collection support during lab- and field-testing to assure proper analytical

procedures are used. Kværner and GTI will perform the final economic evaluation. GTI will provide project management and be responsible for reporting and interactions with DOE on this project.

EXECUTIVE SUMMARY

The cofunding agreement with ChevronTexaco continues under discussion. ChevronTexaco's Chinchaga Gas Plant in Alberta, Canada will not be increasing capacity as planned. Since they do not have a commercial need for the contactor, they have withdrawn that site and are seeking another suitable location. We have begun seeking alternative hosts and sites as a backup. A meeting was held with ChevronTexaco in Denver this quarter to identify potential locations. Most of their needs are outside the North American market. They have asked for a test unit design for a West African site. Discussions have begun for a potential application at their Carter Creek Plant in Wyoming. This site handles a high pressure natural gas stream with 16% H_2S requiring treatment to bring it to 4 ppm.

EXPERIMENTAL

No experimentation was performed this quarter.

RESULTS AND DISCUSSION

No results have been achieved at this point.

CONCLUSION

No conclusions have been reached at this point.

REFERENCES

None