

## ***9. NOVEL GAS-LIQUID-SOLID SEPARATOR FOR DRILLING/PRODUCTION***

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**SPONSOR:** OCAST

### **INTRODUCTION:**

An important component of a drilling rig is the gas-liquid-solid separation system. Currently, the separation system consists of large screen shakers and large steel tanks. This can be made more compact and portable by modifying the existing GLCC separator utilizing it to concentrate the drilled solid particles into a solid rich stream for efficient separation. A patent has been applied by Impact Technologies LLC (a Tulsa based company) on this technology, which cooperates as a partner in this project. Impact Technologies LLC has also signed an Intellectual Property agreement with The University of Tulsa for rights to use the technology and conduct further developments.

### **SCOPE AND OBJECTIVES:**

This proposal aims at the development of innovative gas-liquid-solid 3-phase compact separator, as a simple and cost effective solution for drilling and production applications. The proposed compact separator will require minor maintenance, easy to construct, install and operate over wide range of applications.

The project objectives are met through theoretical studies in The University of Tulsa, laboratory testing of the proposed compact separator design model in Tulsa, prototype fabrication and testing in Tulsa and deployment of the separator in wells being drilled in Oklahoma by Oak Resources (an Oklahoma oil and gas Producer).

### **COOPERATION WITH INDUSTRY:**

This project represents close cooperation between University of Tulsa, Impact Technologies LLC, and Oak Resources, Inc.

### **APPLICATIONS AND DELIVERABLES:**

The developed compact separator for gas-liquid-solid flow can also be used for a variety of applications, such as back flow (or clean up period) of oil and gas production wells after a sand fracture job; oil and gas wells producing large amounts of sand during their normal operation; and trench less drilling for utilities and pipeline crossings. The compact three-phase separator can be used in reducing the size of rigs for heliporting to remote drilling locations.

The final deliverable of this project is a novel commercially ready compact separator, that use both centrifugal and gravity forces for gas-liquid-solid separation for drilling and production applications.

**ANTICIPATED COMPLETION DATE:** January 2008