

Public Executive Summary

Title: Technologies of the Future for Pipeline Monitoring and Inspection

Name of Offeror: The University of Tulsa

Project Director/Principal Investigator: Dr. Michael Volk, Jr.

Additional participants: T.D. Williamson, Inc.

Solicitation Number: RFP2008DW2902 (08121-2902-02)

Project Start Date: December 2, 2009

Project End Date: December 30, 2011

Total Estimated Cost:	\$	187,841.00
RPSEA Maximum Share:	\$	118,121.00
The University of Tulsa Cost Share:	\$	67,841.00

The project director and principal investigator to carry out the proposed work is Dr. Michael Volk who is the Associate VP of Research and Technology Development program at the University of Tulsa. The industry participant is T. D. Williamson (TDW). The project title is: Technologies of the Future for Pipeline Monitoring and Inspection.

The objective of this project is to provide a system for monitoring and maintaining deepwater pipelines which would predict and allow proactive measures to be taken to avoid the problems associated with pipeline fouling or plugging or other deleterious conditions in the pipeline. To be of interest for field employment the technology will have the following advantages:

- A lower deployment cost than existing conventional technologies while providing the same service,
- Be applicable where existing conventional technologies are not, and
- Provide better safety and/or data quality than current technologies such as one that would reduce the risk of a stuck pig.

A method for monitoring and maintaining a pipeline which both predicts and allows proactive measures to be taken to avoid the problems associated with pipeline fouling or plugging or other deleterious conditions in the pipeline will be developed. This will be accomplished by using miniature capsules to record and/or record/transmit measured data in real time. The measurements would be analyzed to identify anomalous conditions existing in the pipeline being monitored and corrective action(s) implemented based upon the real time measurement of the parameter of interest. The ideal capsule would be the size and shape of a pill. These capsules would be recovered on the platform and re-injected to gather additional data.

Five key deliverables would result from this project:

1. Status report on current state of the art and operators perspective
2. Prototype test and report documenting findings
3. Cost vs. value assessment
4. Challenges that must be overcome
5. Recommended path forward

The proposed project involves the integration of the latest technology advancements in the medical field and the petroleum industry coupled with standard state-of-the-art pipeline technology. The impact of the project would be a pipeline that is unsupervised and auto adaptive to the environment so that real time problem identification and corrective action can be implemented. Potential pipeline problems will be mitigated to avoid costly down time and repair. A key feature of this technology is to develop full knowledge of flow assurance parameters from the reservoir to the sales point in pipelines and production risers; and from the wellhead through drilling risers to the rig when developing a field. The technology will significantly reduce environmental contamination concerns. It is expected that years of trouble free pipeline operation will occur increasing production.

The participants in this project include Tulsa University and its partner T.D. Williamson who is based in Tulsa, OK. T.D. Williamson is a global provider of performance-based solutions to operators of pressurized piping systems. They also have a 12" pipeline facility that is 1,100 feet long that will be used to test the prototype and to compare the results to those gathered using their commercial products. Interest in funding the concept has been expressed by pipeline service companies and by DeepStar members. The University has over 50 member companies where over \$2.5 million in research is being conducted in erosion/corrosion, paraffin's, hydrates, nano-sensors for measurement while drilling and nano-batteries. Support will be pursued with these companies to advance and expand the technology developed under the project. Leveraging of funds would be 0.56\$ for every RPSEA \$.

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