

**SOUTHWEST RESEARCH INSTITUTE®  
QUARTERLY STATUS AND PROGRESS REPORT  
FOR PERIOD ENDING MARCH 9, 2005**

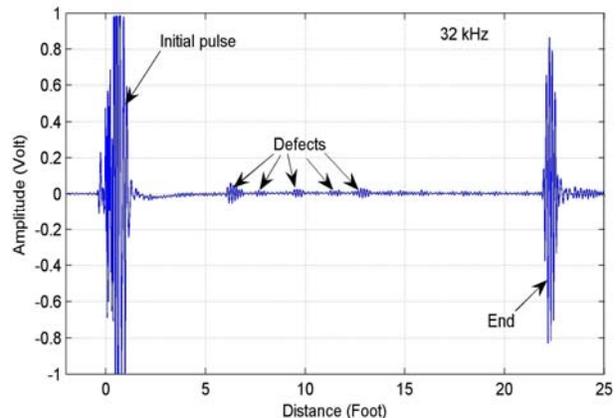
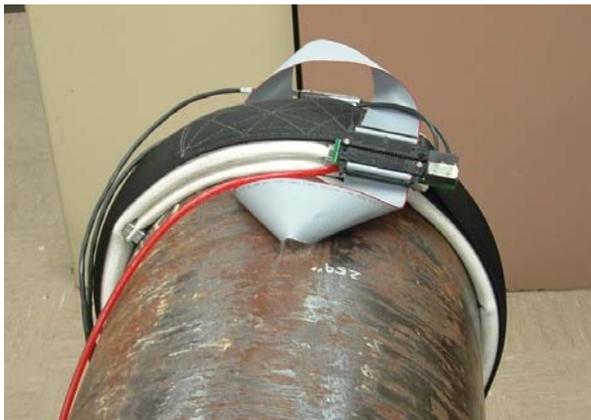
**OTHER TRANSACTION AGREEMENT DTRS56-03-T-0013  
SwRI® PROJECT 14.10062**

**“HIGH-POWER LONG-RANGE GUIDED-WAVE INSPECTION OF PIPELINES**

Approximately one-half of the nation’s supply of crude oil and petroleum products and virtually all of its natural gas supplies are transported through a pipeline network over 2 million miles long. Since a majority of these pipelines are operated at high pressure, and some carry hazardous liquids, pipeline failure can cause severe damage to human health, property, and the environment. The long-range guided-wave technology can inspect long sections of pipeline (typically more than 100 feet from the sensor in either direction in aboveground pipe for detection of 2- to 3-percent internal and external corrosion defects) and is useful for direct assessment of pipeline conditions for enhanced safety.

This project is aimed at producing a high-amplitude guided wave so that a significantly longer length of piping than is presently achievable could be inspected. The target goal of the project is a twenty-fold increase in the guided-wave signal amplitude using the magnetostrictive sensor (MsS) technology developed at Southwest Research Institute (SwRI). Industrial partners in this project include the Pipeline Research Council International, Southern California Gas Company, Gulf South Pipeline Company, and SwRI.

Field evaluations of the high-power guided waves showed the capability of inspecting more than 500 feet of pipeline in one direction. Additional field evaluations are being arranged. Also, the dry-coupling method that eliminates the need for adhesively bonding ferromagnetic strips to the pipe is being incorporated into the MsS system.



**Dry-coupling test arrangement and 32-kHz T-mode test data obtained from a pipe sample**

*Contact:* Hegeon Kwun, Ph.D.  
Staff Scientist  
Southwest Research Institute  
6220 Culebra Road  
San Antonio, Texas 78238  
(210) 522-3359 phone  
[hkwun@swri.org](mailto:hkwun@swri.org)