

**SOUTHWEST RESEARCH INSTITUTE®
SUMMARY STATUS FOR PROJECT NO. 14.06172
AGREEMENT DTRS56-02-T-0003**

**“FEASIBILITY OF IN-LINE STRESS MEASUREMENT BY CONTINUOUS
BARKHAUSEN METHOD”**

STATUS OF WORK THROUGH JUNE 30, 2003

This 18-month project relates to the problem of mechanical damage, hard spots, and other stress anomalies in a pipeline. Current in-line inspection (ILI) systems using magnetic flux leakage (MFL) or ultrasonic methods to inspect pipelines for corrosion or cracks are not sensitive to regions of anomalous stress on the pipe wall. The Continuous Barkhausen Noise (CBN) method, whose feasibility is being evaluated in this project, has been shown in earlier SwRI work to detect such regions.

This project was designed to determine if CBN can be implemented on an existing MFL inspection pig by taking advantage of the fact that there are convenient transition regions in the magnetic flux around the pig. These transition regions are potential sensing areas for CBN. The project is studying the magnetic fields, designing CBN sensors, and testing them with pull rig operation.

To date, Task 1: Determine Optimum Sensor Location, and Task 2: Determine Optimum Sensor Design, have been accomplished. All components of Task 3 leading up to the Rosen pull tests were completed in this quarter. Test specimens were acquired, and two types of surface stress anomalies (peened and quenched) were installed in them. Six sets of sensors and associated interface electronics were fabricated and checked out. Software for data acquisition was also written and tested. Test specimens were shipped to Rosen’s Houston office in preparation for a July 7–10 pull-testing schedule.

Point of Contact

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