

## Low Frequency Electromagnetic Technique (LFET) Helps a Major Oil and Gas Company Inspect Storage Tanks



STATE OF THE ART PRODUCTS AND SERVICES  
FOR NON-DESTRUCTIVE TESTING

# FROM THE FIELD

### **Problem\Challenge:**

A major Oil and Gas Company, with oil and gas well sites located in the Texas Panhandle and Western Oklahoma, was experiencing problems with their above ground storage tanks due to heavy production and sour crude. Most of the tanks were found to have internal corrosion within the lower 8" of the tank shell. In addition, this company did not have an accurate inventory of the equipment at the well sites. The company wanted the lower 16" of each tank shell circumference at each well site to be 100% inspected.



Figure 1: Typical Tank Battery

**Solution:**

Beginning on March 20th, 2006 TesTex, Inc. partnered with Premier NDT Services to provide inspection services for approximately 2,200 Above Ground Storage Tanks at approximately 1,700 different locations in the Texas Panhandle and Western Oklahoma for this major Oil and Gas Company. These storage tanks contained Crude Oil, Produced Water, and Natural Gas Condensate.

Prior to starting the project, TesTex, Inc. produced (6) PS-2000 Systems, (4) 8” Low Frequency Electromagnetic Technique (LFET) Scanners. Premier NDT Services established a field office in Perryton, Texas. TesTex Inc. and Premier NDT Services staffed (15) people to man this project.

Three inspection teams were formed consisting of employees from both TesTex, Inc. and Premier NDT Services. The Oil and Gas Company provided the inspection teams with a master site list with latitudinal and longitudinal coordinates to the sites. Each site consisted of 0-4 tanks and sometimes more. This list was plotted into a GPS program on each team’s laptop computer for navigational purposes.

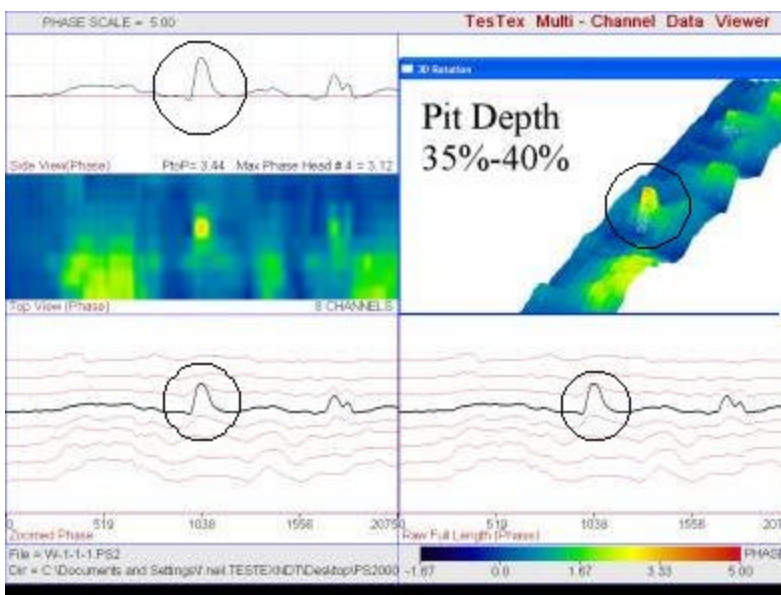


Figure 2: Sample waveform exhibiting 35%- 40% pitting.

Once the teams arrived at the site, a Low Frequency Electromagnetic Technique (LFET) scan around the bottom 18” was conducted using the TesTex developed PS-2000 LFET System and 8” Flat Bottom Scanner to quickly and accurately detect any defects in the tank shell. To achieve the 18” elevation, three passes around the tank with the scanner were needed. The first pass was at the 0-8” elevation, the second at 5”-13”, and the last

at 10"-18" elevations. This gave a few inches of overlap in scanning, as well as an additional 2" of coverage above and beyond what the company required. The circumference of the tank shell was scanned from the right side of the manway, around the tank, to the left side of the manway. Finally, an Ultrasonic B-Scan follow up was performed on any marked defects as well as nozzles, and areas inaccessible to the LFET.

Ultrasonic Thickness Measurement Locations (TML's) were recorded on each tank. There were 8 equally spaced locations around the tank shell, an inch from the bottom weld seam and 6' above the bottom weld seam. Three locations were recorded on the tank deck as well as 1 foot below the tank deck.

A Tank Inventory, consisting of the tank manufactured date, serial number, and other information to help identify the tank, was conducted.

Finally, an External Examination (overall condition of the site) of each site was conducted for each storage tank. Each TML was also recorded in the External Examination. In addition, photographs of each tank were taken as per a quality assurance survey.

### **Conclusion:**

TesTex, Inc. along with Premier NDT Services was able to provide this Oil and Gas Company an accurate inventory of well site locations as well as a quick and accurate inspection of each storage tank. The two companies were able to complete this inspection in 10 months time. Any defect below the company's tank minimum was immediately reported to the company to ensure no future leaks would occur.

For more information on the TesTex, Inc. PS-2000 System or other TesTex products and services, please contact us at [info@testex-ndt.com](mailto:info@testex-ndt.com) or call us at (412) 798-8990.

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