Missouri Department of Natural Resources
Water Pollution Control Program

UST Technical Bulletin
Leak Detection Methods
#8 of 8

STATISTICAL INVENTORY RECONCILIATION (SIR)

What is it?
A statistical analysis of inventory data such as daily tank level, deliveries and sales to distinguish tank system leakage from other common sources of inventory irregularities. This method can be used as either a 0.1 gal/hr tightness test or a 0.2 gal/hr monthly monitoring.

After statistical analysis of the data, the vendor will declare tank system integrity as either (Pass, Fail or Inconclusive; Tight, Investigate Loss or Inconclusive).

Requirements:
1. Very accurate inventory data is required to perform an analysis.
2. Inventory data collection is very similar and has many of the same requirements as the "Inventory Control" method.
3. The vendor will provide forms (optional) and instructions that must be followed.
4. Analysis should account for most factors that could cause inventory irregularities.
5. Keep a record of each test result on file.

Equipment Required:
- Stick accurately marked in 1/8 inch increments (or read to nearest 1/8 inch)
- Gallon chart for each tank
- Product finding paste (optional)
- Water finding paste
- Thermometer (optional)
- Log book or vendor-supplied forms
- Calculator
- Clock (optional)

Advantages: Minimal equipment requirements. Tests both tank and piping systems. As tightness test, no interruption of routine activities nor overfilling of tank required. As monthly monitoring, identifies common operational problems such as tank chart error, meter mis-calibration, tank tilt, etc.

Disadvantages: Method can declare analysis as "Inconclusive", requiring reanalysis. Consecutive or frequent "Inconclusives" may result in precision tightness testing of the system. Method can falsely declare a "Leak" due to operational problems. Method is dependent upon inherently inaccurate data collection procedures.

After December 22, 1990, vendors or manufacturers of these tests must be able to demonstrate through third-party certification that the method is capable of detecting the leak rate specified with a statistical probability of at least 95% with no more than a 5% probability of a false alarm. Ask for documentation.