Leak Detection
Automatic Tank Gauging (ATG) Systems

The most popular monthly monitoring method of release detection

Owners and Operators Seminars

What is an ATG?

- Automatic Tank Gauging (ATG) Systems are devices that are permanently installed on-site to monitor the Underground Storage Tanks and provide **Inventory** information and leak **Testing.**
- ATG systems employ different technologies to perform these functions.

What is a Continuous ATG?

- A **Continuous-in-Tank Monitoring** ATG system is an ATG system that goes into a Test Mode whenever the dispensing stops. This system stores the information about the test until enough data is available to issue a conclusive test report. Otherwise the system will report its inability to complete the test, and a test in the Quiet Mode will be required.
- Continuous ATG systems require prior approval.
- No Inventory Control data is required for approved Continuous ATG systems which are approved under option (h).

What Are the Components of an ATG System?

1. **The probe.** The component that is installed in the tank. The actual measuring instrument.
2. **The Control Panel.** The component that is usually installed in the office and contains the microprocessor.
3. **The Messaging devices.** These include a printer, a link to an on-site or offsite computer terminal, and an audible/visual alarms

What is the Difference Between ATG Models?

- **Probe Technologies:** Magnetostrictive, Ultrasonic, capacitance, or mass/buoyancy.
- **Panel Technologies:** different data analysis software, and different hardware. Some are more powerful than others.
- **Peripheral Components:** Electronic line leak detector, interstitial and other external monitoring sensors.

What is Required?

- At least one **conclusive** test each month, **AND**
- An Inventory Control report using daily inventory data as obtained using the ATG, instead of the dipstick, and the dispensing totalizer.

OR

- A **conclusive** test and a complete monthly report from an **Approved Continuous-In-Tank Monitors**

How are ATG System Evaluated?

- ATG systems are evaluated and certified by a third party evaluator for their capability in the leak **testing mode.** These systems have different capabilities in terms of tank sizes and product stored, as well as different capabilities in terms of Probability of Detection (Pd) and Probability of False Alarm (Pfa).
- ATG systems are also evaluated for waiting time required after a delivery, to conduct a test, and the time required for completing a leak test.

Are All ATG Systems Approved?

- **No!** Only ATG systems that have been certified by a third party evaluator as being capable of detecting a 0.2 gallon per hour or smaller leak, with a probability of detection of 95% or better and a probability of false alarm of 5% or less.

When is Prior Approval of an ATG system required?

- ATG systems that are third party certified as meeting the detection capability requirements, do not require prior approval by the DEQ.

  UNLESS

- The ATG system is used as a Continuous-In-Tank Leak Detection system.

What is a TEST mode?

- For most ATG systems a TEST mode is when a button or switch is turned on in the control panel which starts the leak detection process known as the TEST mode. The dispensing must be stopped until the test is completed, and no deliveries must be made during the test. Each ATG system requires a minimum waiting time, usually more than three hours, to complete a test.
- **Approved** Continuous-In-Tank Leak Detection Systems perform this test continuously and **do not** usually need a no-dispensing and no-delivery test time unless the system report indicates this need.

What is the INVENTORY mode?

- The INVENTORY mode is the normal operating mode of most ATG systems. In this mode the ATG measures the amount of product and the amount of water in the tank. Some ATG systems report a temperature compensated volume of product in the tank.
- The ATG can be used to measure the volume of a delivery of product into the tank. If it reports the temperature compensated volume and is checked before and after the delivery.

What Kind of Inventory Information Is Provided?

- ATG systems report the amount of product in the tank at any time. Some can report a temperature compensated volume, and some store data and generate other inventory management functions.
- Some ATG systems transmit the data to other off-site locations.

Will an ATG system work reliably in Waste Oil Tanks?

- Only a mass/buoyancy type ATG system is capable of operating in a waste oil tank. This is due to the fact that waste oil does not have a uniform density. Prior approval is required for any ATG system that a vendor claims will work **reliably** in waste oil tanks having a capacity of more than 550 gallons.
- Waste oil tanks having a capacity of 550 gallons or less can use **Manual Tank Gauging** for the life of the tank.

What Is a Test Mode?

- A Test Mode is a process which activate the ATG system to perform a sequence of volume tests to determine if the tank is tight or leaking. The test requires a minimum waiting time before a result is conclusive.
- Some ATG systems can be programmed to activate the Test Mode at predetermined time intervals. Others require **someone** to push a button or turn a switch.

What Is a CONCLUSIVE Test?

- A conclusive test is when the ATG is able to generate a report stating that the tank is tight or leaking. (“pass” or “fail”). An “inconclusive” (or a similar term) is used in the report generated by the ATG system when a conclusive test is not possible.
- When a test is inconclusive a new test must be conducted.
- When an approved Continuous-In-Tank Leak Detection system test is inconclusive a test must be conducted in the quiet (no-dispensing and no-delivery) mode.

What is a FAIL test?

- An ATG system report of a “Fail” means a “suspected release” which must be reported within 24 hours and investigated.
- A “suspected release” becomes a “confirmed release” when a tightness test indicates that the tank is leaking. A suspected release is “cancelled” if the tightness test reports the tank to be tight.
- An ATG must be repaired and/or calibrated by a manufacturer’s qualified technician if it erroneously reports a “fail”. (False alarm)

What Is the Detectable Leak Rate for ATG Systems?

- Some ATG systems are third party certified as capable of detecting 0.2 gallons per hour, and other ATG systems are third party certified as capable of detecting 0.1 gallon per hour.
- There are no allowable leak rates in Michigan. The best ATG systems is one that can detect the smallest leak with the highest probability of detection and lowest probability of false alarms.

When should I set the ATG in the Test mode?

- The best time to set the ATG system in the test mode is when the tank is as close as possible to being full and, at least when the tank is more than 50% full.
- The Test should be conducted as often as possible but not less than once a month. Since if done only once a month and the result is inconclusive, the tank is out of compliance for that month.

What Records Must I Keep?

- Inventory Control records for at least 36 months as well as records of conclusive monthly tests.
- The Vendor's Claim documents or a copy of the Third Party Evaluation of the ATG system being used.

Please Keep in Mind

- The ATG is a piece of equipment. The owner or operator must be familiar with this equipment. Make sure that you and your staff know what to do, to get the required information. Also make sure that your staff can tell when the system is out of order, and what must be done in that case.
- Equipment function more reliably and for longer period of time when operated properly and maintained periodically.

Thank you!