

METHODS FOR COMPLYING WITH THE REVISED EPA UST REGULATIONS



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* State and local regulations may differ from the federal requirements. Contact your local agency to ensure you meet those requirements for compliance. Material presented here is meant as a primer on maintaining compliance. Owners and operators are responsible for knowing the regulations that apply to their site and maintaining their compliance program.

WHAT DOES THE EPA REQUIRE FOR TANK LEAK DETECTION FOR PETROLEUM?

SECTION 280.40

All regulated tanks must have release detection so that leaks are discovered quickly before contamination spreads from the Underground Storage Tank (UST) site.

You must provide your UST system with release detection (often also called leak detection) that allows you to meet all four basic requirements:



1

You can detect a leak from any portion of the tank that routinely contains petroleum

2

*Your leak detection is **installed and calibrated** in accordance with the manufacturer's instructions*

3

*Your leak detection is **operated, maintained, and tested** in accordance with the manufacturer's instructions*

4

Your leak detection uses one of the seven methods described in the federal regulations (Section 280.43)

Additional information on the EPA UST requirements can be found at <https://www.epa.gov/ust>

THE 7 METHODS FOR RELEASE DETECTION

Any one method of release detection has the potential to miss an event, or its magnitude, if solely relied upon. It is best practice to build a system with multiple release detection methods incorporated and manage it through the Automatic Tank Gauge.

State and local regulations may differ from the federal requirements. Contact your local agency to ensure that you are meeting all requirements.

More information on state programs, including contact information, can be found here:

1

Automatic Tank Gauging

2

Monitoring for Vapor in the Soil

3

Monitoring for Contamination in Groundwater

4

Interstitial Monitoring

For tanks installed after April 11, 2016, Interstitial Monitoring is the only permissible release detection method.

5

Statistical Inventory Reconciliation [SIR]

-or-

6

Weekly Manual Tank Gauging

Only valid for tanks less than 2000 gallons

7

Annual Tank Tightness Testing and either Daily Inventory Control or Manual Tank Gauging

Only valid for tanks less than 10 years old



AUTOMATIC TANK GAUGING [ATG] SYSTEM

An ATG system detects leaks through highly accurate inventory measurements combined with the tracking of delivery and dispensing activities.

Automatic Tank Gauge (ATG)

Inventory Probe for
Automatic Tank Gauging

Required Equipment

An ATG that meets regulatory requirements (TLS-450PLUS)

Probes with Leak Detection capability for each tank

Optional leak testing software for Continuous Statistical Leak Detection (CSLD)

What are the regulatory requirements?

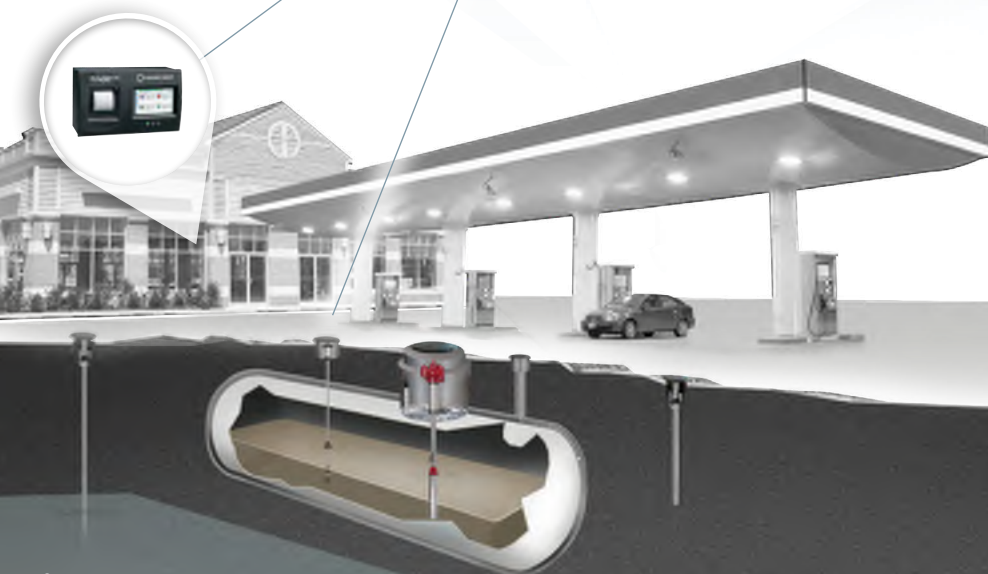
The ATG must be able to detect a leak of 0.2 gallons per hour with a 95% probability of detection and with a false alarm rate of 5%

The ATG must perform Inventory Control

The ATG must be operated in one of the following modes:

Static Leak Detection testing
(Veeder-Root's 0.2 SLD test)
conducted every 30 days

Continuous Statistical Leak Detection
(Veeder-Root's CSLD mode)
operating on an uninterrupted basis



VAPOR MONITORING

Vapor monitoring senses or measures fumes from leaked product in the soil around the tank to determine if the tank or underground piping is leaking.

Required Equipment

Vapor Sensors for Monitoring Wells

An automatic tank gauge for monitoring the Vapor Sensor (TLS-450PLUS)

What are the regulatory requirements?

There must be porous materials in the excavation zone

The area must be free from interferences such as groundwater and rainfall that would prevent detection

There must be a sufficient number of monitoring wells

Considerations

Vapor Monitoring is not recommended as sole method for compliance because of the delay in detection and potential for wet sensors. By the time the vapor sensors go to alarm, the contamination has likely already occurred.



GROUNDWATER MONITORING

Groundwater monitoring involves the use of permanent monitoring wells placed close to the UST. The wells are checked at least monthly for the presence of product that has leaked from the UST and is floating on the groundwater surface.

Groundwater Well

Required Equipment

Groundwater Sensors

An automatic tank gauge for monitoring the Groundwater Sensors (TLS-450PLUS)

What are the regulatory requirements?

The groundwater level is within 20' of ground surface

The system is able to detect 1/8" of product on top of groundwater

There are a sufficient number of monitoring wells

Considerations

Groundwater Monitoring is not recommended as the sole method for compliance because of the delay in detection. By the time the sensors go to alarm, contamination has likely already occurred.



INTERSTITIAL MONITORING

Interstitial Monitoring requires secondary containment, which provides a barrier between the tank or piping system and the environment. The barrier holds the leak between the tank and the barrier so that the leak is detected.

Required Equipment

Double-walled USTs, in which an outer wall completely surrounds the primary tank

- *Brine-filled for Wet Monitoring*
- *Dry Space (annulus) for Dry Monitoring*

Impermeable excavation liners that partially or completely surround the tank

Internally fitted liners (bladders)

Interstitial Sensor

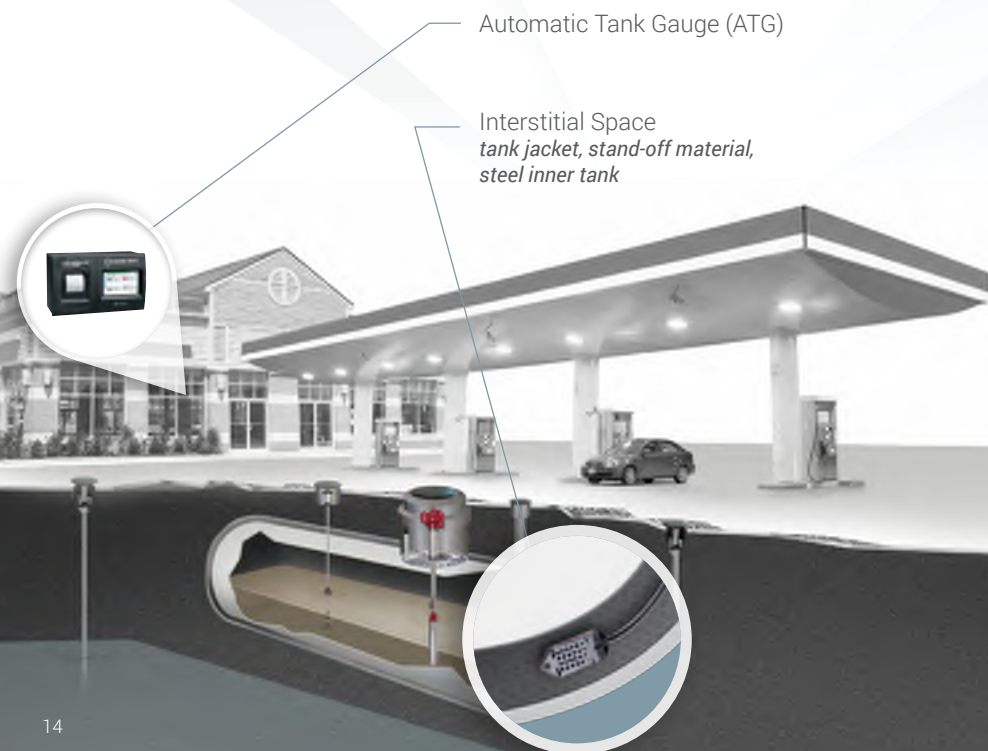
- *An automatic tank gauge monitors the Interstitial Sensors (TLS-450PLUS)*

What are the regulatory requirements?

The interstitial monitor must be checked at least once every 30 days

Considerations

The interstitial sensor needed will depend on the type of secondary containment barrier and the tank material being used.



WHAT SENSORS CAN BE USED FOR INTERSTITIAL MONITORING?



Non-discriminating Liquid Sensor

Detects the presence of liquids in dry spaces

Pictured: Fiberglass Tank Interstitial Sensor (Steel tank model also available)



Hydrostatic Sensor

Detects a change in the level of a monitoring liquid between the walls of a double-walled tank

Pictured: Dual-point Single Float Hydrostatic Sensor



Discriminating Liquid Sensor

Detects the presence of hydrocarbons in dry spaces

Pictured: Solid State Interstitial Sensor



Secondary Containment Vacuum Sensor

Detects a change in condition that indicates a hole in the interstitial spaces

Pictured: Vacuum Sensing Kit

STATISTICAL INVENTORY RECONCILIATION [SIR]

SIR analyzes inventory, delivery, and dispensing data collected over a period of time (30 to 60 days) to determine whether or not a tank system is leaking.

What are the regulatory requirements?

0.2 gallons per hour leak detection meets monthly requirements for the life of the tank

0.1 gallons per hour leak detection capability meets the federal requirements as an equivalent to tank tightness testing

If the SIR system has the ability, it can also provide a tightness test result on the product piping system

Considerations

SIR is a vendor-supplied service that requires reoccurring fees

Does not reduce the burden of collecting and transferring or transposing inventory data

MANUAL TANK GAUGING

This is the manual measurement at the beginning and end of a designated quiet period (when no liquid is added/subtracted).

What are the regulatory requirements?

Manual tank gauging, or sticking, can only be used on tanks 2,000 gallons or smaller

Tanks 1,000 gallons or less can use this method alone

Tanks from 1,001 to 2,000 gallons:

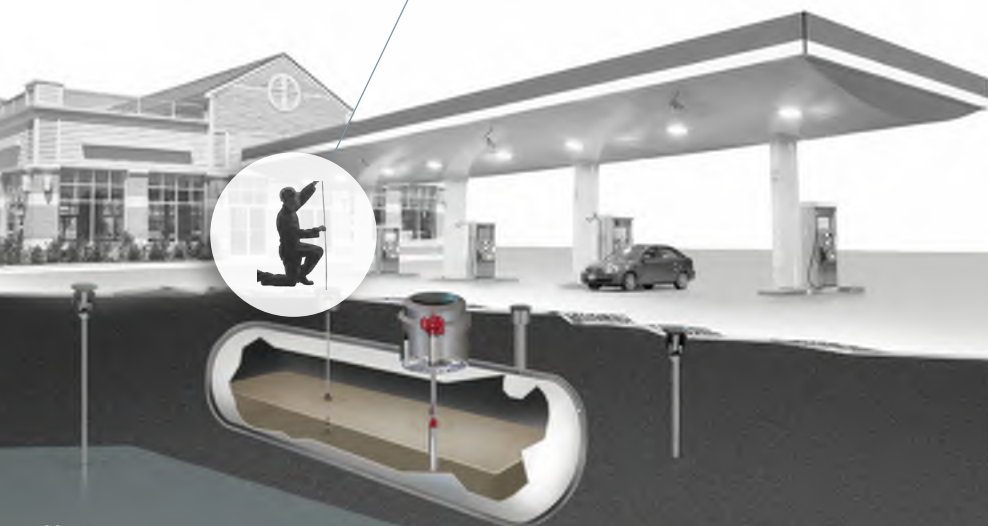
- *Must be combined with periodic tank tightness testing*
- *Only for 10 years after installing a new UST or upgrading an UST with corrosion protection*

Considerations

This method requires taking the tank out of service for at least 36 hours each week to take measurements of the tank's contents

Applies to a limited number of applications because of 2,000 gallon tank maximum

Manual Tank Gauging
(Sticking)



TANK TIGHTNESS TESTING + INVENTORY CONTROL

This is a combination of two practices:
Tank tightness testing and inventory control

Tank tightness testing requirements

Annual test conducted by vendor who installs special equipment to test the portion of the tank that routinely contains product.

Inventory Control requirements

Daily inventory level measurements to 1/8" accuracy

Monthly water level measurements to 1/8" accuracy

Monthly reconciliation of deliveries and dispensing

Monthly calculation to prove that the system is not leaking

What are the regulatory requirements?

Must supply monthly inventory calculation, capable of detecting a leak of 1% of monthly throughput + 130 gallons, proving no leak

Pass an annual tank tightness test capable of detecting a leak of 0.1 gallons per hour

Considerations

This method can only be used for 10 years after installing a new UST or upgrading an UST with corrosion protection

Operations must be suspended during tank tightness testing

Inventory control requirements can be met with ATG data

WHAT DO THE 2015 EPA REGULATIONS ADDRESS?

40 CFR Parts 280 and 281

Revisions to the 1988 underground storage tank (UST) regulation and to the 1988 State Program Approval regulation. 2015 regulation addresses approximately 25 separate UST-related areas; key highlights include:

Adds periodic operations and maintenance requirements for UST systems

Addresses UST systems deferred in the 1988 regulations

Adds new release prevention and detection technologies

Updates codes of practices

Addresses operator training requirements

Additional information on the EPA UST Requirements can be found at <https://www.epa.gov/ust>

WHO DOES THIS APPLY TO AND BY WHEN?

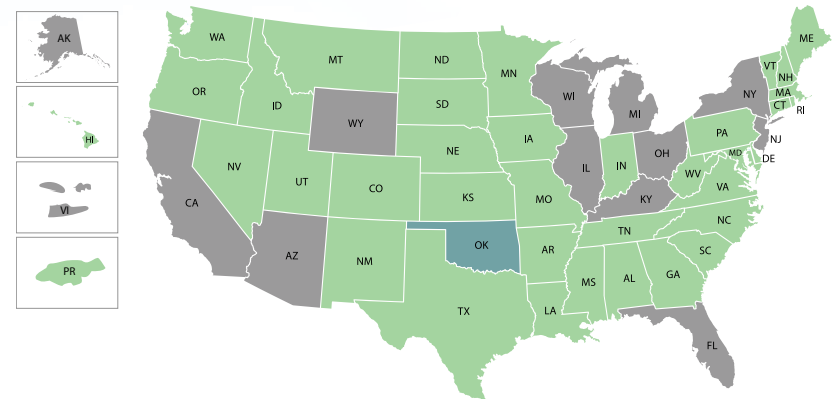
Many states (38) and territories (DC and PR) have State Program Approval from the EPA

In these cases, a state's UST regulation is followed in lieu of the federal UST regulations

States without State Program Approval must follow the new federal regulation

Implementation dates for the requirements are either:

1. On the effective date of the regulations (90 days after publication in the Federal Register)
- or
2. Three years after the effective date of the regulations



Approved Program under the 1988 regulation Approved Program under the 2015 regulation

Map of States with Approved UST Programs (2017)

MONTHLY INSPECTIONS

40 CFR §280.36(a)(1)(i) requires owners/operators to visually inspect spill prevention equipment and release detection equipment at least once every 30 days.

What are the regulatory requirements?

At a minimum, each inspection must include the following:

SPILL PREVENTION EQUIPMENT

Visually check for damage

Remove liquid or debris

Check for and remove obstructions in the fill pipe

Check that fill pipe cap is secure

Check for leaks in interstice
(for double-walled equipment with interstitial monitoring)

RELEASE DETECTION EQUIPMENT

Check to ensure equipment is operating with no alarms or unusual operating conditions present

Ensure records of release detection testing are reviewed and current

ANNUAL INSPECTIONS

40 CFR §280.36(a)(1)(ii) requires owners/operators to visually inspect the following at least once each year.

What are the regulatory requirements?

At a minimum, each inspection must include the following:

CONTAINMENT SUMPS

Visually check for damage, leaks to the containment area, or releases to the environment

Remove liquid or debris from contained sumps

Check for leaks in interstice
(for double-walled equipment with interstitial monitoring)

HAND-HELD RELEASE DETECTION EQUIPMENT

Check devices such as tank gauge sticks or groundwater bailers for operability and serviceability

A single individual may be designated as more than one class of operator, as long as that individual is trained in all responsibilities for each class of operator designated.

RECOMMENDED O&M WALK-THROUGH INSPECTION PRACTICES

40 CFR §280 allows owners and operators to conduct O&M walk through inspections according to a standard code of practice developed by a nationally recognized association or independent testing laboratory or according to requirements developed by your implementing agency.

*The following are **recommended best practices** to perform during your walk through inspections:*

FILL AND MONITORING PORTS

Inspect all fill or monitoring ports and other access points to make sure that the covers and caps are tightly sealed and locked

SPILL AND OVERFILL RESPONSE SUPPLIES

Inventory and inspect the emergency spill response supplies. If the supplies are low, restock the supplies. Inspect supplies for deterioration and improper functioning.

CONTAINMENT SUMP AREAS

Look for significant corrosion on the UST equipment.

DISPENSER HOSES, NOZZLES, AND BREAKAWAYS

Inspect for loose fittings, deterioration, obvious signs of leaks, and improper functioning

OPERATOR TRAINING

No later than October 13, 2018, you must have designated Class A, B, and C operators and train them on their UST responsibilities.

You must keep a list of currently designated operators trained for each facility and proof of training or retraining for each operator.

What are the different designations and responsibilities?

CLASS A OPERATOR

Person who has primary responsibility to operate and maintain the UST system according to the UST regulation. Class A operator training provides a general knowledge of the UST regulation

CLASS B OPERATOR

Person who has day-to-day responsibility for implementing the UST regulation. Class B operator training provides a more in-depth understanding of operation and maintenance aspects of UST systems

CLASS C OPERATOR

Person responsible for the immediate response to a problem at an UST facility, such as a gas station attendant. Class C operator training must cover how to respond to an alarm or emergency

RECORDS MANAGEMENT

You must keep records that you can provide to an inspector during an inspection and prove your facility meets certain requirements.

Check with your implementing agency to determine if there are additional records you must keep.

YOU MUST KEEP THESE RECORDS	FOR THIS LONG
Spill and Overfill Prevention	
<i>Testing and inspection records for spill and overfill prevention equipment and containment sumps used for interstitial monitoring of piping (beginning on October 13, 2018)</i>	Three years*
Documentation showing spill prevention equipment and containment sumps used for interstitial monitoring of piping is double-walled and the integrity of both walls is periodically monitored	For as long as periodic monitoring is conducted
Corrosion Protection	
Records of your 60-day inspections for your impressed current corrosion protection system	Three most recent inspections
Records of cathodic protection tests for your corrosion protection system	Two most recent tests

YOU MUST KEEP THESE RECORDS

FOR THIS LONG

Release Detection	
30-day monitoring results	One year
Tightness test results	Until the next test
<i>Records for your annual release detection equipment operability tests (beginning on October 13, 2018)</i>	Three years*
Copies of performance claims provided by release detection equipment manufacturers or equipment installers	Five years
Records of maintenance, repair, or calibration of on-site release detection equipment	One year after servicing is completed
<i>If you use vapor monitoring or groundwater monitoring, records of a site assessment showing that the monitoring system is set up properly (beginning on October 13, 2018)</i>	For as long as vapor monitoring or groundwater monitoring is used*
Walk through Inspections	
<i>Records showing you performed periodic walk-through inspections (beginning on October 13, 2018)</i>	One year*
Compatibility	
If you store certain bio-fuels or other substances identified by your implementing agency, records demonstrating compliance with the compatibility requirement	For as long as the UST system stores the regulated substance
Operator Training	
<i>Records for each designated Class A, B, and C operator showing they have been trained (beginning on October 13, 2018)</i>	For as long as the operator is designated at the facility*
Repairs	
Records showing that a repaired UST system was properly repaired	Until the UST system is permanently closed or undergoes a change-in-service
Financial Responsibility	
Records that document you have financial responsibility as explained in EPA's booklet, <i>Dollars and Sense</i> (www.epa.gov/ust/dollars-and-sense-financial-responsibility-requirements-underground-storage-tanks)	Until the UST system is permanently closed or undergoes a change-in-service
Closure	
Records of the site assessment results required for permanent closure	For at least three years after closing an UST

* indicates a new regulation

USING AN AUTOMATIC TANK GAUGE TO DEMONSTRATE COMPLIANCE



Method	ATG Report
<i>Static Leak Detection</i> <i>Continuous Statistical Leak Detection</i>	<i>Tank Leak Test History</i> <i>Passed Test Results</i>
<i>Vapor Monitoring</i> <i>Groundwater Monitoring</i> <i>Interstitial Monitoring</i>	<i>Sensor Status Report</i>
<i>Tank Tightness and Inventory Control</i>	<i>Inventory History Report</i> <i>An Annual Tank Tightness Testing Report will be required from testing contractor</i>

Reports must be printed or archived every 30 days

ENVIRONMENTAL MONITORING REPORTS



Reports Environmental Combined Tank Test Print (2)

Report Type	Date & Time	Test Method	Total Hours
TANK 1 - PRODUCT 1			
FULLEST PERIODIC	10/2/2017 09:18 PM	SLD Periodic Test	2
FULLEST PERIODIC	10/18/2017 11:09 PM	CSLD Periodic Test	80
FULLEST PERIODIC	10/19/2017 06:06 PM	SLD Periodic Test	2
FULLEST PERIODIC	11/1/2017 12:01 PM	SLD Periodic Test	2
FULLEST PERIODIC	11/5/2017 05:31 AM	SLD Periodic Test	2
FULLEST PERIODIC	11/11/2017 10:23 PM	SLD Periodic Test	2
FULLEST PERIODIC	11/19/2017 01:19 PM	SLD Periodic Test	2
FULLEST PERIODIC	11/29/2017 11:45 AM	SLD Periodic Test	2
FULLEST PERIODIC	12/1/2017 09:51 AM	SLD Periodic Test	2
FULLEST PERIODIC	12/3/2017 07:15 PM	SLD Periodic Test	2

Reports Environmental Line Leak Print (2)

All Records

Test Type	Date / Time	Test Method	Gross Test
Line 1: Test			
Gross		PLLD	0
Last Gross	02/24/2017 01:54 PM	PLLD Gross Test	
Last Periodic	02/21/2017 09:24 PM	PLLD Periodic Test	
Last Annual	02/21/2017 09:38 PM	PLLD Annual Test	
First Periodic	02/02/2017 11:08 PM	PLLD Periodic Test	
First Periodic	01/01/2017 06:05 AM	PLLD Periodic Test	
First Periodic	12/02/2016 11:24 PM	PLLD Periodic Test	
First Periodic	11/03/2016 12:17 AM	PLLD Periodic Test	
First Periodic	10/03/2016 12:25 AM	PLLD Periodic Test	

Reports Environmental Sensor Status Print (2)

#	Sensor Location	Status
L 1	Liquid Sensor 1	SENSOR OUT ALARM
L 3	Liquid Sensor 3	SENSOR OUT ALARM

INVENTORY HISTORY REPORTING



Reports Inventory Inventory History Print

23 Results • Show 25 results per page Page 1 of 1

Current Mo

Date / Time	Fuel Volume	Fuel Volume TC	Fuel Height	Water Hei
TANK 1: regular				
04/22/2017 08:40 PM	8383	8326	18.8	0
04/22/2017 08:40 PM	364	360	18.8	0
04/21/2017 08:40 PM	8383	8328	18.8	0
04/21/2017 08:40 PM	364	360	18.8	0
04/20/2017 08:40 PM	8384	8301	18.8	0
04/20/2017 08:40 PM	364	360	18.8	0
04/19/2017 08:40 PM	8383	8316	18.8	0
04/19/2017 08:40 PM	364	360	18.8	0
04/18/2017 08:40 PM	8383	8331	18.8	0

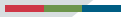
Reports Inventory Power Outage Inventory Print (0)

9 Results • Show 25 results per page Page 1 of 1

All Records

Increase Date/Time	Fuel Volume	Water Volume	Tempe
TANK 1: Regular			
Power Removed: 04/06/2018 06:38 AM	0	0	
Power Restored: 04/06/2018 06:39 AM	917	0	
Gross Volume Change:	917		
Power Removed: 04/20/2018 09:58 AM	10000	613	
Power Restored: 04/20/2018 10:00 AM	10000	708	
Gross Volume Change:	0		

LEARN HOW AN AUTOMATIC TANK GAUGE CAN HELP YOU MAINTAIN COMPLIANCE



To request more information about
Veeder-Root's solutions, click below.



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