



Department of  
**Environment &  
Conservation**

# 2018 / 2021 TN UST Rule Changes Contractor Series

## Spill and Overfill Prevention Device Requirements

August 19, 2021

# Presenters

- Mark Braswell-Moderator
  - Deputy Director of Field Office Operations
  - Johnson City, TN
- Don Taylor
  - Environmental Fellow TDEC-UST
  - Chair of National Work Group on Leak Detection Evaluations (NWGLDE)
  - Johnson City, TN
- Mitzie Berry
  - Compliance Inspector
  - Tank School Instructor
  - Johnson City, TN

# Division Website - New Rules Section

## Underground Storage Tanks

### **Guidance for Tank Owners During the COVID-19 Situation**

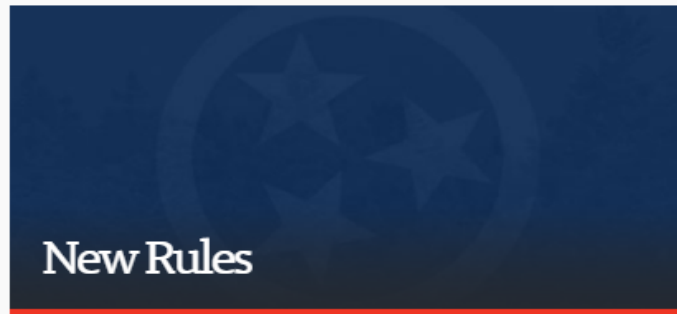
While the department is attempting to operate as normally as possible during these extraordinary times, the Division of Underground Storage Tanks (UST) is following BOE Guidance for Operations During the COVID-19 Situation. [Read Director's Memo](#) about specific steps that the UST Program is taking to exercise common sense regulatory discretion, effective March 26, 2020 through April 30, 2020.

The mission of the Division of Underground Storage Tanks is to protect human health and environment by preventing future petroleum underground storage tank releases and remediating existing petroleum underground storage tank contamination.



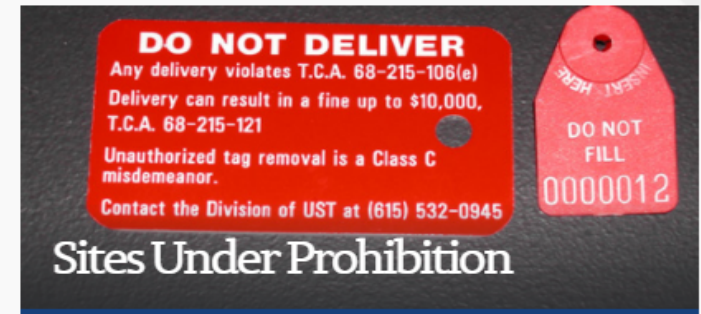
This area contains information about special events, organization charts and telephone lists for the Central Office and all Environmental Field Offices.

[→ Read More](#)



Information about the implementation of the New UST Rules- Coming Soon!!

[→ Read More](#)



### Sites Under Prohibition

Facilities appearing on this list should not be receiving petroleum deliveries, nor should they be selling petroleum. This list is updated weekly. Last updated August 10, 2020

[→ Read More](#)

# TANK TALK Monthly Newsletter Email



Division of  
Underground  
Storage Tanks



August 2020

## Tennessee Tank Talk



### Welcome!

The Tennessee Division of Underground Storage Tanks would like to welcome you to our newsletter *Tennessee Tank Talk*. In each edition of this newsletter series, you will find rule changes helpful tips and tricks, and access to useful information.

Our primary goal of this newsletter is to help Tennessee's petroleum underground storage tank regulated community; tank owners, operators, vendors and other stakeholders to maintain regulatory compliance. Maintaining regulatory compliance means protection of human health and the environment; keeping Tennessee a good place to live, work and play now and in the future. Not only does maintaining compliance help Tennesseans' quality of life it also helps save you time and money by being prepared for our inspections and avoiding any negative consequences of non-compliance. Compliance means lowering the risks of lost petroleum product and avoiding the possibility of expensive cleanup costs.

We hope you find the newsletter aligned with this goal and helpful to your needs. Being our first newsletter please let us know what you think. Send us an email at [Tanks.UST@tn.gov](mailto:Tanks.UST@tn.gov) with an ideas or suggestions to help us improve. And of course, if you are not interested in receiving future newsletters, please use the unsubscribe link located in the footer section.

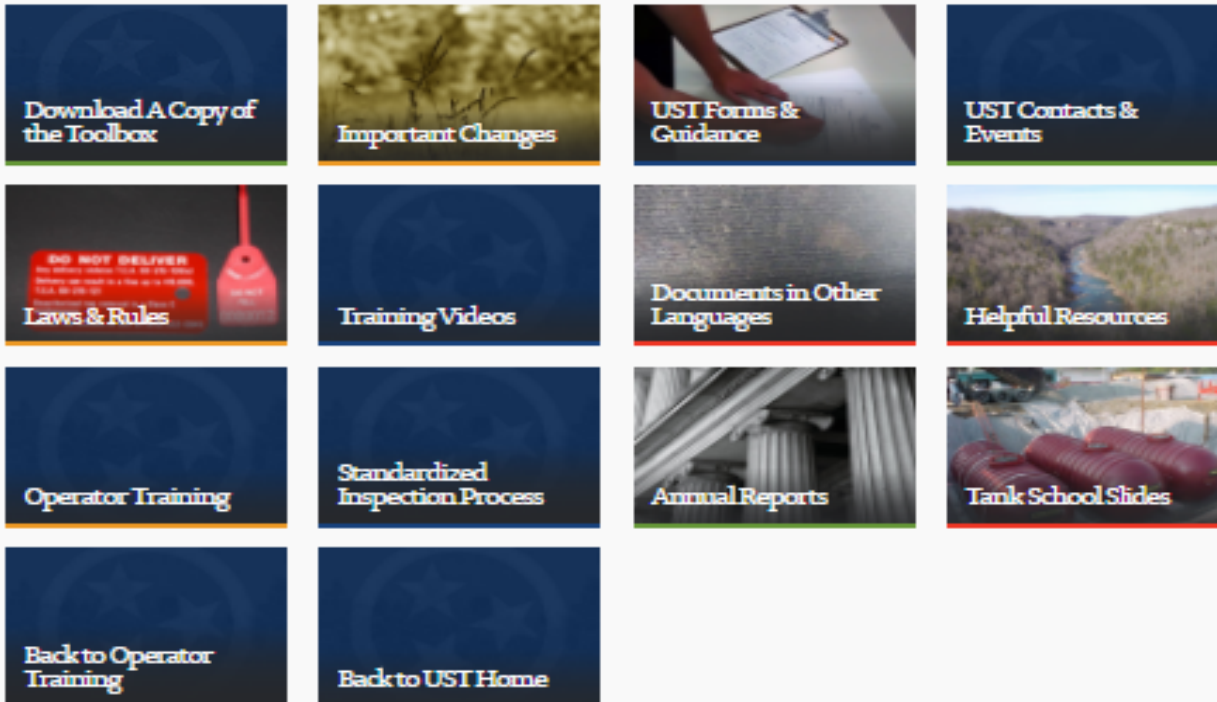
A handwritten signature in black ink that reads 'Stanley M. Boyd'.

Stan Boyd  
Director

# TN DUST Annual Operational Compliance Toolbox

## Underground Storage Tank Owners Compliance ToolBox

Welcome to the 14th edition of the Underground Storage Tank Compliance Toolbox. If you have suggestions for improvements, please let us know. You can email comments/suggestions to: [ask.ideo@tn.gov](mailto:ask.ideo@tn.gov).



This Page Last Updated: April 3, 2020 at 4:56 PM

[HTTPS://WWW.TN.GOV/ENVIRONMENT/PROGRAM-AREAS/UST-UNDERGROUND-STORAGE-TANKS/UST-UNDERGROUND-STORAGE-TANK-OWNERS-COMPLIANCE-TOOLBOX.HTML](https://www.tn.gov/environment/program-areas/ust-underground-storage-tanks/ust-underground-storage-tank-owners-compliance-toolbox.html)



# New Rules Trifold Handout

## COMPATIBILITY

**Action:** UST systems used to store regulated substances blended with greater than 10% ethanol or greater than 20% biodiesel must comply with requirements for fuel compatibility.

**Tank Owner Responsibility:** Notify the Division 30 days prior to storing biofuels greater than 10% ethanol or 20% biodiesel. Provide documentation showing compatibility for all UST system components including tank, piping, containment sumps, pumping equipment, release detection equipment, spill equipment, and overfill equipment.

**All equipment checks, testing and walkthroughs are required to be documented on a Division form or in a format approved by the Division.**



General Services, Authorization No. 331921, copies January 2020. This public document was promulgated at a cost of \$0.14 per copy.

IF YOU HAVE ANY QUESTIONS CONCERNING THIS DOCUMENT, PLEASE CONTACT YOUR LOCAL ENVIRONMENTAL FIELD OFFICE:

CHATTANOOGA FIELD OFFICE  
(423) 634-5745

COLUMBIA FIELD OFFICE  
(931) 380-3371

COOKEVILLE FIELD OFFICE  
(931) 520-6688

JACKSON FIELD OFFICE  
(731) 512-1300

JOHNSON CITY FIELD OFFICE  
(423) 854-5400

KNOXVILLE FIELD OFFICE  
(865) 594-6035

MEMPHIS FIELD OFFICE  
(901) 371-3000

NASHVILLE FIELD OFFICE  
(615) 687-7000

THE TENNESSEE DIVISION OF UNDERGROUND STORAGE TANKS WEBSITE CAN BE FOUND AT THE FOLLOWING ADDRESS:

<http://www.tn.gov/environment/program-areas/ust-underground-storage-tanks.html>

## TENNESSEE DIVISION OF UNDERGROUND STORAGE TANKS

### 2018 Federal Rule Change Quick Reference Guide



For all current tank owners and all certified A and/or B operators in Tennessee

The following new requirements will go into effect for all Tennessee Underground Storage Tank facilities on **October 13, 2021**.

These requirements are applicable to all new installations after October 13, 2018.



Department of  
**Environment &  
Conservation**

# New Rules Trifold Handout

## SPILL AND OVERFILL

**Action:** Conduct a spill bucket integrity test every 3 years or use a double-walled spill bucket with interstitial monitoring.

**Tank Owner Responsibility:** Maintain a passing spill bucket integrity test conducted within the last 3 years or documentation the prevention equipment is double walled and is periodically monitored. Spill bucket tests must be maintained for 3 years.

**Action:** Inspect overfill prevention equipment every 3 years.

**Tank Owner Responsibility:** Maintain records demonstrating overfill functionality testing conducted within the last 3 years. Applies to all forms of overfill and documentation must be maintained for 3 years.

**Action:** Flow restriction devices (Ball float valves) used for overfill prevention will no longer be able to be repaired or replaced if found damaged or non-functional.

**Tank Owner Responsibility:** If ball floats are found damaged or non-functional during overfill functionality testing then a new method of overfill must be installed.

**Action:** Ball float valves may not be used for overfill prevention for new UST systems installed after October 13, 2018.

**Tank Owner Responsibility:** Tank owners may install automatic shutoff devices (flapper valves) or an audible/visual overfill alarm as the primary method of overfill prevention.

**Action:** Test or inspect components within 30 days after a repair to spill or overfill prevention equipment.

**Tank Owner Responsibility:** Maintain documentation of testing conducted within 30 days of a repair to spill and overfill equipment for the operational life of the system.

## RELEASE DETECTION / WALKTHROUGHS

**Action:** Systems using (interstitial monitoring (IM) for piping release detection must conduct sump integrity test every 3 years.

**Tank Owner Responsibility:** Maintain a passing sump integrity test conducted within the last 3 years. Sump tests records must be maintained for 3 years.

**Action:** Monthly Walk through inspections of spill buckets, flapper valves, release detection equipment and results.

**Tank Owner Responsibility:** Maintain records of monthly walkthrough inspections conducted every 30 days and consist of the following:

- Inspect spill prevention (spill bucket log) for liquid, debris or damage.
- Visually inspect the tank fill riser drop tube and flapper valve (if present) for damage.
- Operability of release detection equipment.
- Presence of alarms or other unusual operating conditions
- Review of current release detection results.

Monthly walk through records must be maintained a minimum of 12 months.

**Action:** Annual Walkthrough Inspection.

**Tank Owner Responsibility:** Annual walk through inspections are conducted once every 12 months and consist of the following:

- Inspect all operation equipment (contained and uncontained) for:
  - damage
  - leaks to the containment area
  - releases to the environment
- Remove liquid (in contained sumps) or debris
- Inspect hand-held release detection equipment (gauging sticks) for operability and serviceability.

Annual walk through records must be maintained a minimum of 12 months.

**Action:** Annual testing of electronic and mechanical release detection components.

**Tank Owner Responsibility:** Maintain the 3 previous annual tests of release detection components.

- Automatic tank gauge and other controllers: test alarm; verify system configuration; test battery backup
- Probes and sensors: inspect for residual buildup; ensure floats move freely; ensure shaft is not damaged; ensure cables are free of kinks and breaks; test alarm operability and communication with controller
- Automatic line leak detector function test
- Vacuum pumps and pressure gauges: ensure proper communication with sensors and controller
- Test all IM tank and sump sensors

**Action:** Test or inspect components of spill or overfill prevention equipment within 30 days after a repair.

**Tank Owner Responsibility:** Maintain documentation of testing conducted within 30 days of a repair to a containment sump for the operational life of the system.



**DISCLAIMER:** This document is provided by TDEC as a reference for the regulated community. Every effort has been made to ensure its accuracy; however, it is not intended as a substitute for the requirements in the rules of the TDEC Chapter 0400-18-01 Underground Storage Tank Program. Tank owners/ operators are responsible for compliance with the requirements of 0400-18-01.

# Disclaimer

The State of Tennessee does not endorse any specific brands, manufacturers, or vendors of equipment, products or services.

Any brand names mentioned or depicted of any equipment, products, or services in this presentation are used for illustrative purposes only and are neither endorsements nor recommendations for such equipment, products, or services and shall not be construed as such.



# Testing Requirements- Qualifications

All testing requirements must be conducted by a “qualified person” as defined by U.S. EPA:

- 1) Licensed Contractor certified by the device manufacturer
- 2) Approved by authority having jurisdiction (Division of UST)
- 3) Conducted in accordance with Division guidance and can demonstrate adequate experience
- 4) Obtain certification from nationally recognized organization (PEI)

# Spill and Overfill Prevention Devices – What is NEW?!

## Spill Prevention Equipment

- Monthly Walkthrough Inspections
- 3-Year Spill Prevention Equipment Integrity Testing

## Overfill Prevention Equipment

- 3-Year Overfill Equipment Functionality Testing

## Recordkeeping Requirements

- Monthly spill prevention device/spill bucket walkthrough inspections – ONE YEAR
- 3-year spill prevention device integrity test – THREE YEARS
- 3-year overfill device functionality test – THREE YEARS
- Double-wall spill prevention equipment monthly monitoring results – Records must be maintained as long as this monthly monitoring method is in use.

# Spill Prevention Equipment - Review

Spill prevention equipment is required to prevent the release of product to the environment when the the transfer hose is detached from the fill pipe, catching any drips and small spills that may occur during the delivery.

Spill prevention equipment must be installed on all USTs with a product transfer volume greater than 25 gallons at one time.

Spill prevention equipment is not manufactured or designed to contain petroleum product for long periods of time.



# “All-In-One” STP Sump as Spill Prevention Equipment

The UST fill port may be in the same containment sump as the ATG, STP, Transition piping sump, etc., therefore the entire containment sump is also the spill containment equipment during a fuel transfer (delivery).

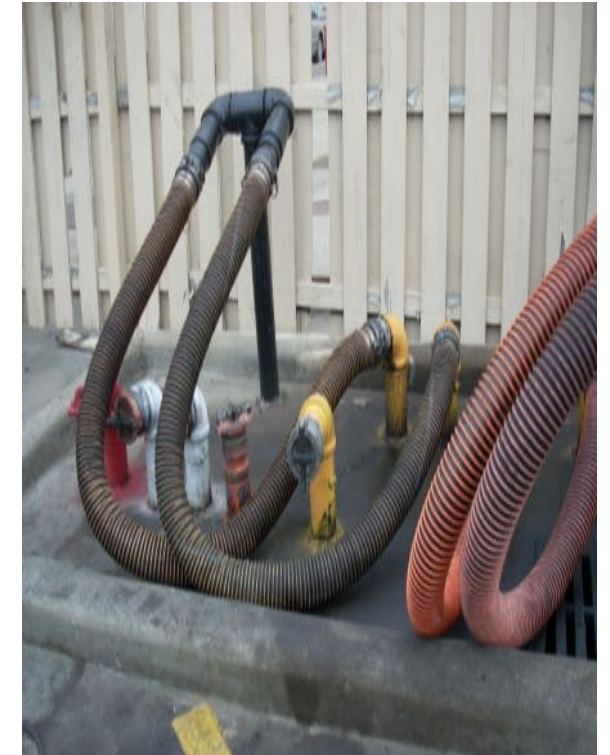
This containment sump may have continuous monitoring with a sensor. If requirements are met for this method, the three-year spill prevention device testing may not be required.



# Alternative Spill Prevention Equipment



- Some tanks may be filled at a port which is in a contained box, vault, room, or bermed surface area for spill prevention.
- Equipment must be compatible with the stored product and not allow a spill to be released to the environment.
- Monthly inspections are required. Damaged equipment will require repair or replacement.
- Storm drains or oil/water separators could become a potential pathway for a spill or overflow of product.



# Spill Prevention Devices with Drain Back Valves

Some spill prevention devices (spill buckets) are equipped with a drain back mechanism that allows accumulated product to drain back into the tank.

Any debris that collects in the spill bucket could prevent the drain back mechanism from closing properly and the mechanisms can allow accumulated water to drain back into the tank.

Drain back mechanisms should not be used when water may be present in the spill bucket. Water ingress can harm tanks and lower quality of fuels that contain ethanol.

These devices can be removed and replaced with a petroleum compatible manufacturer approved component.



# Spill Prevention Equipment - Monthly Walkthrough Inspections

Monthly walkthrough inspection requirements of spill prevention equipment include:

- Visually check for damage;
- Remove liquid or debris;
- Check for and remove obstructions in the fill pipe;
- Check the fill cap to make sure it is securely on the fill pipe; and,
- For double walled spill prevention equipment with interstitial monitoring, check for a leak in the interstitial area

Monthly spill prevention equipment inspection records must include:

- a list of each area checked, whether each area checked was acceptable or needed action taken;
- a description of actions taken to correct an issue;
- double walled spill prevention equipment: monthly sensor status/alarm reports

Delivery records are required if the UST System receives infrequent deliveries.

# Spill Prevention Equipment - Three Year Integrity Testing

- Single wall spill prevention must be tested **at least once every three years** to ensure the equipment is liquid tight by using vacuum, pressure, or liquid (hydrostatic) testing.
- Double wall spill prevention can be visually inspected every thirty days or monitored with an interstitial sensor.
- Records for double walled spill prevention monitored with an interstitial sensor must be maintained for as long as the equipment is in use. This can include; the monitoring records and the documentation of manufacturer's requirements are met.
- Conduct an integrity test within 30 days of discontinuing sensor monitoring of double wall spill prevention.



# Spill Prevention Integrity Test – Hydrostatic Method

These Instructions are directly from the DUST Technical Chapter 4.2 Spill & Overfill Prevention Appendix I of the SIM. Testing can also be conducted in accordance with PEI RP 1200 Section 6.

## **Before Testing:**

1. Water and a tape measure that is capable of measuring to one-eighth of an inch shall be used. Spray paint or an indelible marker may be used if a tape measure is not available.
2. Ensure that the device is empty and clean.
3. Make sure that any drain valve is completely closed. If the drain valve is not sealing properly, then it must be repaired before conducting the test. A leaking drain valve may result in a failed test.
4. Fill cap must seal properly or be replaced to avoid any surface water intrusion into the tank.

# Spill Prevention Integrity Test – Hydrostatic Method

## Conducting the test:

1. Using an indelible marker, mark the inside of the spill bucket at a level which is slightly below the top of the cap on the fill riser.
2. Fill the spill bucket with water to the level of the marking.
3. Allow water to stand for a minimum of one (1) hour.
4. Measure the difference of the water level using a tape measure to the nearest one-eighth of an inch.
5. Empty and clean the spill bucket.

**The test water may be re-used for additional testing or must be disposed of properly.**

# Spill Prevention Hydrostatic Test Results

- If the water level decreases by one-eighth of an inch or more, then the spill bucket fails the test.
- Determine if the spill bucket can be repaired (if allowed by the spill bucket manufacturer). If not, it must be replaced.
- If the water level change in the spill bucket is less than one-eighth of an inch, then the spill bucket passes the test.
- Record the test results on the Division's Spill Prevention Device Hydrostatic Test Report, form CN-1366.



STATE OF TENNESSEE  
 DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
 DIVISION OF UNDERGROUND STORAGE TANKS  
 William R. Snodgrass Tennessee Tower  
 312 Rosa L. Parks Avenue, 12th Floor  
 Nashville, TN 37243

**SPILL PREVENTION DEVICE HYDROSTATIC TEST REPORT**

➤ This form must be used in conjunction with **Technical Chapter 4.2 SPILL AND OVERFILL PREVENTION, APPENDIX 1** "Spill Prevention Device Hydrostatic Testing Procedures".

➤ If a defective spill prevention device is discovered at any time, then the device shall be repaired or replaced.

➤ The owner/operator shall notify the Division within 72 hours prior to any repair or replacement. **Repairs may only be made if allowed by the spill bucket manufacturer.**

➤ If a defective spill prevention device is replaced, a Division inspector should be present to determine if an environmental impact has occurred and if a site check will be required.

I. UST FACILITY INFORMATION		II. OWNER INFORMATION		
UST Facility ID #	<input type="text"/>	Name/Company:	<input type="text"/>	
Facility Name:	<input type="text"/>	Address:	<input type="text"/>	
Address:	<input type="text"/>	City:	<input type="text"/>	State: <input type="text"/> Zip: <input type="text"/>
City:	<input type="text"/>	County:	<input type="text"/>	Phone Number: <input type="text"/>
III. TESTER INFORMATION				
Name:	<input type="text"/>	Company Address:	<input type="text"/>	
Title/Position	<input type="text"/>	City:	<input type="text"/>	State: <input type="text"/> Zip: <input type="text"/>
Company Name:	<input type="text"/>	Phone Number:	<input type="text"/>	
IV. TEST RESULTS				
Spill Device ID	Initial Reading	Final Reading (allow at least one hour)	Difference (>1/8 inch is FAIL)	Pass/Fail
Example: Tank 1A Premium	8 1/4 in.	8 1/4 in.	0 in.	Pass
Example: Tank 2A Diesel	7 1/2 in.	7 in.	1/2 in.	Fail
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**NOTE: Use as many copies of this form as needed. Each copy must also be signed as required below.**

Tester's Signature/Date: \_\_\_\_\_ Tester's Name Printed \_\_\_\_\_

Owner/Operator Signature/Date: \_\_\_\_\_ Owner/Operator's Name Printed \_\_\_\_\_

CN-1366 (Rev. 11-15)

RDA 2304

# Spill Prevention Integrity Test – Vacuum Method

## Single Wall and Double Wall

- Device manufacturers- vacuum testing kits
- Consult device manufacturer's test procedure for test times
- PEI RP-1200:
  - Single wall bucket: Initial 30" water column. End result 26" water column or greater after one minute is a PASS
  - Double-wall bucket: Initial 15 " water column. End result 12" water column or greater after one minute is a PASS
  - Document test results on manufacturer's form, PEI form or form approved by the Division.



# Spill Prevention Equipment Repairs

Some spill bucket manufacturers allow spill bucket retrofit repairs

- 1) Must be fuel compatible
- 2) No field applied coatings or patches
- 3) Check for UL approval or;
- 4) Request Division approval

All spill equipment must be integrity tested within **30** days of any repairs.

EMCO Wheaton



Diversified Products



# Third Party Approved Spill Prevention Test Methods

National Work Group on Leak Detection Evaluations  
[http://www.nwglde.org/methods/sec\\_spill\\_cont.html](http://www.nwglde.org/methods/sec_spill_cont.html)



Search NWGLDE

Secondary and Spill Containment

Revision Date: July 3, 2019

## Secondary and Spill Containment Test Methods

Click on the vendors specific EQUIPMENT NAME to go to that Listing.

VENDOR	EQUIPMENT NAME	LEAK RATE/THRESHOLD/ MAX TANK CAPACITY
AC'CENT Environmental	<a href="#">Dri-Sump Containment Tightness Test Method</a>	0.1 gph with PD = 100%, and PFA = 0%
Franklin Fueling Systems	<a href="#">Incon TS-STC Sump Test System</a>	0.00192 inch in 15 minutes with PD=95%/0.0080 inch/hr
Fueling and Service Technologies, Inc.	<a href="#">Hydro-Tite™ Leak Detection System For Secondary Containment</a>	0.00065 inch in 12 minutes with PD = 95%/0.010 inch/hour
Leak Detection Technologies, LLC	<a href="#">DPLeak Differential Pressure Leak Test – Leak Detection and Leak Location Test Method</a>	0.1 gph with PD = 100%, and PFA = 0%. 0.005 gph with PD = 96%, and PFA = 0%
	<a href="#">MCCleak Enhanced Interstice Test for Doubled-Walled Tanks, UDCs, Sumps and Spill Buckets</a>	Leak Rate – 0.005 gph w/ 72 hour wait before testing/1,500 interstitial capacity. Leak Threshold – 0.0017 gph

# Spill Prevention Equipment Testing - RECORDKEEPING

- The three-year integrity test results must be maintained for **3** years.
- Records for double walled spill prevention monitored with an interstitial sensor must be maintained for as long as the equipment is in use. This can include; the monitoring records and the documentation of manufacturer's requirements are met.
- Owners and/or operators must conduct an integrity test within 30 days of discontinuing periodic monitoring of this equipment.
- All spill prevention equipment repair documentation must be maintained for the life of the equipment. All post repair integrity testing must be maintained for **3** years.

# Spill Prevention Equipment Repair and Replacement

## When To Contact the Division

- 1) Preventative Maintenance- not required to report unless contaminated backfill material is encountered.
- 2) Failure of 3-YEAR Spill Bucket Integrity Test;
  - and the device is not repaired or replaced within thirty days of discovery
  - the device is replaced and contaminated backfill material is encountered.





# Spill Prevention Equipment Repair and Replacement

## When To Contact the Division



When to Replace

Failure to repair or replace defective spill prevention devices is a violation and an unusual operating condition. The devices must be repaired or replaced immediately (within thirty days or as required by the Division).

A spill bucket must be integrity tested upon installation or after a repair.



What to Report



When to Test

# Spill and Overfill Reporting - 25 Gallon Rule

**SPILL:** Fuel released to the surface of the ground during the transfer of petroleum to a UST system.

**OVERFILL:** Fuel released during the transfer of petroleum by filling the UST system over its capacity.

A spill or overfill **less than 25** gallons:

- Must be contained and immediately cleaned up and;
- If not contained and cleaned up within 72 hours must be reported.

A spill or overfill **more than 25** gallons:

- Must be contained and immediately cleaned up and;
- Report within 72 hours and begin corrective action.



# Hydrostatic Testing – Water Disposal

- **The Division does not regulate the disposal of petroleum contaminated test water. WHO DOES???????**
- **Division of Solid/Hazardous Waste Management-**
  - hazardous substance requires characterization
  - “reclamation of hazardous material”
- **Division of Water Resources**
  - NPDES permit required for onsite disposal to surface water
  - stormwater disposal through local municipality
  - wastewater treatment plants may receive locally generated water
- EPA OUST Technical Compendium discusses options for disposal

# Overfill Prevention Equipment - Review

Overfill prevention devices are installed in the UST to help prevent the tank from being overfilled during product delivery.

Overfill prevention devices are designed to stop product flow, reduce product flow or alert the delivery person during the delivery before the tank becomes full and product is released into the environment.

- Automatic Shutoff Devices (flapper valves)
- Flow Restriction Devices (Ball Float valves)
- Overfill Alarms - High Level Audible / Visible Alarms



# Overfill Prevention Equipment – New Rule Requirement

Overfill prevention equipment must be inspected for operability at least once every **three** years.

At a minimum, the inspection must ensure that the overfill prevention equipment is set to activate at the correct volume level specified for that device and the device will activate when petroleum reaches that level during a product delivery.

UST systems filled by transfers of no more than 25 gallons at one time are not required to use overfill prevention equipment.

# Tank Charts Are Required for all Overfill Device Testing

- Tank manufacturer- Steel Tank Institute, Xerxes and CSI maintain these records for warranty claims. CSI maintains a database of Owens-Corning FRP tanks prior to 1996.
- Steel tanks can be measured vertically, and estimated length can be used to generate a tank chart on the STI website.
  - <https://greertank.com/calculators/Horizontal-Cylindrical-Tank-Volume-Calculator.html>
- Steel tanks manufactured prior to 1985 can use monthly inventory and an SIR vendor using 3 months of inventory data to build a chart. STI can almost always provide an accurate chart for any size steel tank.
- How to create a tank chart.
  - <https://www.modweldco.com/resources/tank-chart-generator>
  - <https://www.xerxes.com/en/document-library/>
  - <http://containmentsolutions.com/calibration-charts.html>

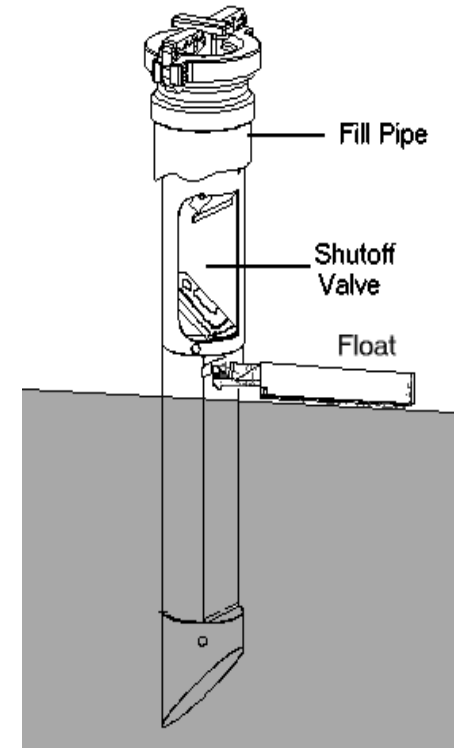
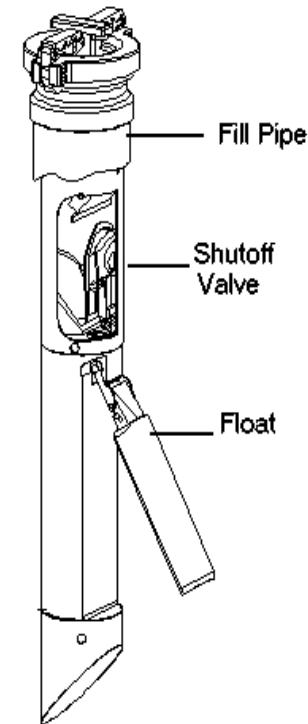
# Overfill Device Calculations

- Overfill Alarm and Ball Floats
  - Find total tank volume in gallons using the tank specific chart.
  - Multiply the total tank volume by 0.90
  - Use tank chart to find the inch measurement that is  $\leq$  the 90% volume
- Automatic Shut Off (Flapper Valve)
  - Find total tank volume in gallons using the tank specific chart.
  - Multiply the total tank volume by 0.95
  - Use tank chart to find the inch measurement that is  $\leq$  the 95% volume
  - Use tank chart and measurements to confirm the riser and shut off length calculations are at no more than 95% total.

# Automatic Shutoff Devices

**Automatic shutoff devices**, sometimes called flappers or flapper valves, are an integral part of the drop tube assembly installed within the tank fill riser. They are designed to initially restrict and subsequently completely shut off flow when product has reached predetermined levels during a delivery. Automatic shutoff valves need to be properly positioned and operate freely to control flow and prevent tank overfills.

The purpose of the operability inspection is to verify the automatic shutoff valve is installed properly, operates as designed and is set to completely shut off flow when the tank is no more than **95 percent** full.










# Automatic Shutoff- Restriction Level and Shutoff Level

All Automatic Shutoff overfill devices must 'shut off' the fuel delivery at **95%**. Each manufacturer may have a different 'restriction' setting depending on the design of the equipment. This initial restriction level activates first to substantially limit the flow of product prior to the actual shut off setting at **95%**.

This allows for some of the remaining product in the delivery hose to be drained into the tank prior to the tank reaching **95%** volume and shut off activation occurs.

EBW Auto Limiter II	Emco Wheaton Guardian A1100	OPW 61-SO / 71-SO	Universal Model 39	Defender Series
				
R = 92% SO = 95%	R = 93%? SO = 95%	R = 95% SO = 98%	R = ? SO = 95%	R = 92% SO = 95%

# Automatic Shutoff Device - Operability Testing

- 1) Remove drop tube from the fill port riser
- 2) Visually inspect automatic shut off valve and float mechanism for any damage or corrosion that inhibits the functionality of the device
- 3) Remove buildup/debris which may restrict the device
- 4) Manually verify the float mechanism moves freely
- 5) If possible, verify that the bypass valve in the drop tube is open
- 6) Measure diameter of tank: manually, ATG Setup, calibration chart
- 7) Verify device will shut off flow at 95% of tank capacity
- 8) Replace the drop tube or repair/replace the device if it does not meet the 95% shut off level or the device is damaged/defective.



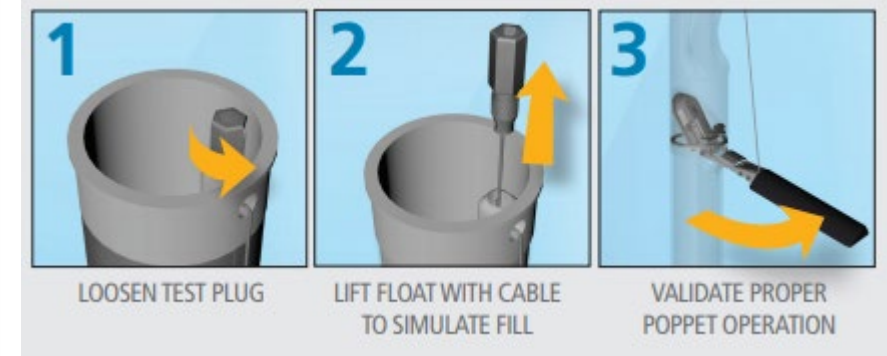
# Automatic Shutoff Devices- “Self Testing”

## Manufacturers

OPW 71SO-T

Franklin Defender

Universal 39 T



The Division does not approve “in-tank” operability testing.

- unable to verify mechanical actuation of the float
- unable to confirm activation and restriction height
- routine wear and tear cannot be observed

# Audible / Visible High-level Alarms

## Overfill alarms - audible/visible high-level alarms:

Overfill alarms provide an audible and/or visible warning to the fuel delivery driver if the product level in the UST reaches the **90 percent** level during a delivery. They are often an integral part of the automatic tank gauge (ATG) system. An overfill alarm does not stop or restrict product flow.

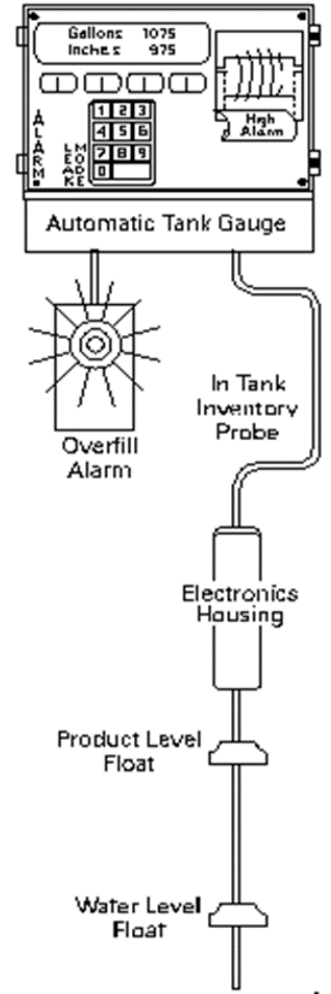
An outdoor device must also be located near the tank location to alert the transfer operator by visual and/or audible methods when the tank volume has reached the programmed level.

The purpose of the operability inspection is to verify that the overfill alarm is operating correctly and is set to provide a warning when the tank is no more than **90 percent** full.



# Overfill Alarm Device Testing – PEI RP1200

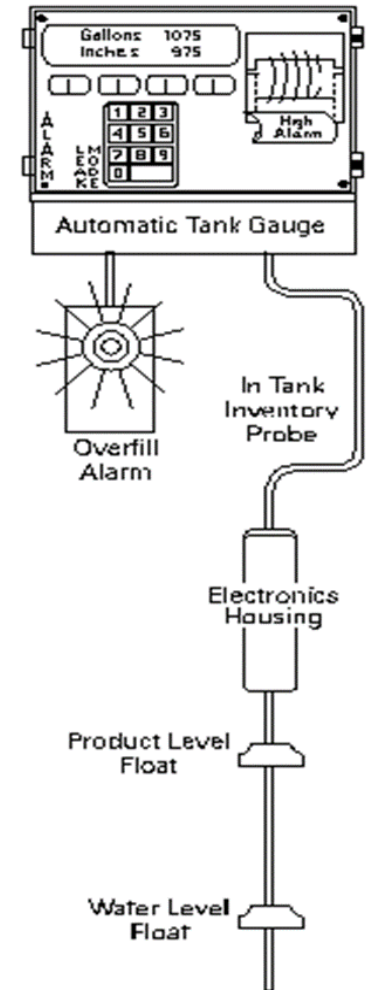
1. Measure the product level in the tank riser where the ATG probe has been removed and compare to the console reading to confirm ATG accuracy. If the reading does not agree, contact the appropriate person.
2. Verify that the overfill alarm on the ATG is set to provide a warning when the tank is no more than 90 percent full. Consult the tank chart for the inch-level setting for 90 percent tank volume.
3. Verify on the ATG console that the overfill alarm circuit is operational.
4. Activate the overfill alarm warning to verify its operation. If found defective, contact the appropriate person.
5. Remove the ATG probe cap and disconnect the cable from the ATG.
6. Remove the ATG probe from the tank. Use care to ensure that the product float on the stem does not catch on the bottom of the riser during removal.
7. Inspect the probe. The floats must move freely on the stem without binding.
8. Reconnect the probe cable and turn on power to monitor.
9. Set the fuel float in the middle of the probe and verify that it is showing the correct inch reading on the monitoring panel.
10. Slowly move the fuel float up the probe until the overfill alarm is triggered. If the float is moved too quickly, it may not trigger the alarm.



# Overfill Alarm Device Testing – PEI RP1200

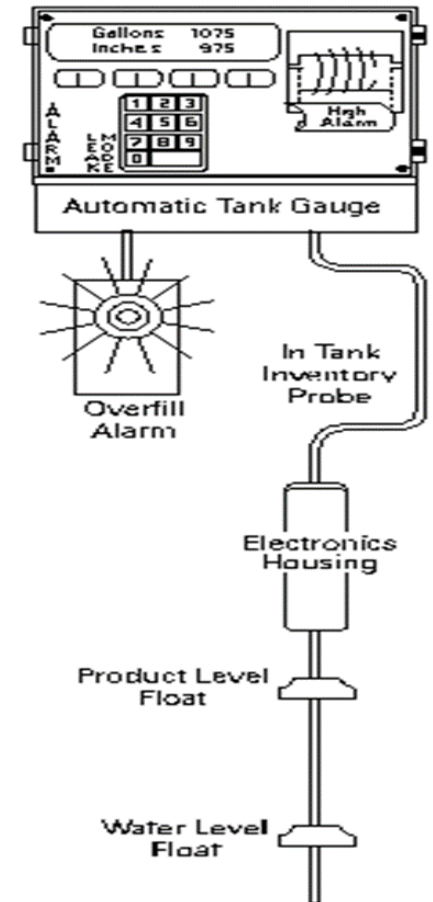
11. Measure the distance from the bottom of the probe to the bottom of the fuel float (confirm different manufacturers point of measurement on the float) when the float first triggers the alarm.
12. On the tank chart, find the volume that corresponds to the height of the float and determine the percent of tank capacity.  
Use this formula to determine the percent of tank capacity at which the alarm was triggered:  
Percent Tank Capacity = (product volume when 90 percent alarm triggered/total tank volume) x 100
13. Clear the alarm condition.
14. Compare the measurements in Steps 11 and 12 to the values programmed into the console.
15. Reinstall the ATG probe.

**If Overfill alarm activates when the tank is no more than 90 percent full, the overfill alarm passes the test.**



# Overfill Alarm Device Testing - Summary

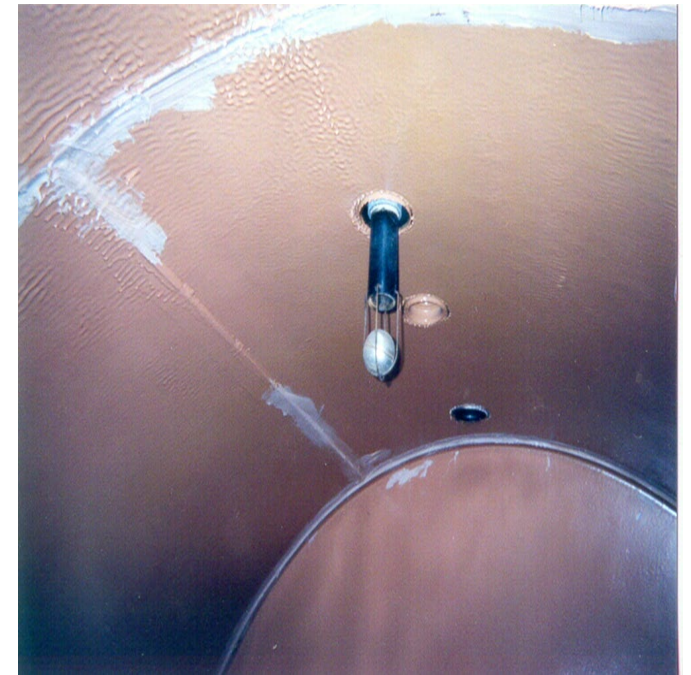
1. Remove the electronic alarm probe device from the tank and visually inspect for damage or corrosion.
2. Ensure the device functions correctly by causing an overfill alarm condition by sliding the float along the probe shaft.
3. Determine the tank volume by tank calibration charts, ATG setup or manually to ensure that the electronic alarm device activates at 90% tank capacity.
4. Ensure that alarm is both audible and visible by the delivery person as an overfill alarm.
5. Reinstall the electronic alarm device in accordance with the manufacturer's installation instructions.
6. Attach Electronic Alarm printout (if applicable) from ATG showing overfill alarms that occurred during testing



# Flow Restriction Devices - Ball Float Valves

A flow restriction device, also known as a ball float valve, is located inside the tank where the vent line exits the tank. The ball float valve restricts vapor flow from the tank as the tank volume reaches no more than **90 percent** full.

As the tank fills, the ball in the valve rises, restricting the flow of vapors out of the UST during delivery. The flow rate of the delivery will decrease noticeably and should alert the transfer operator to stop the delivery. To operate properly, the ball float valve must be properly installed and positioned at the correct height inside the tank and compatible with UST configuration.





# Flow Restriction Devices - Ball Float Valves

To function properly, ball float valves require that the tank top fittings be vapor tight. Ball float valves cannot be used if any the following conditions exist:

1. Suction piping (if tank is overfilled, fuel may be released through the air eliminator at the dispenser)
2. Pressurized deliveries (tank could become over pressurized)
3. Remote fills are used
4. Coaxial stage I vapor recovery is used
5. On emergency generator tanks with suction systems

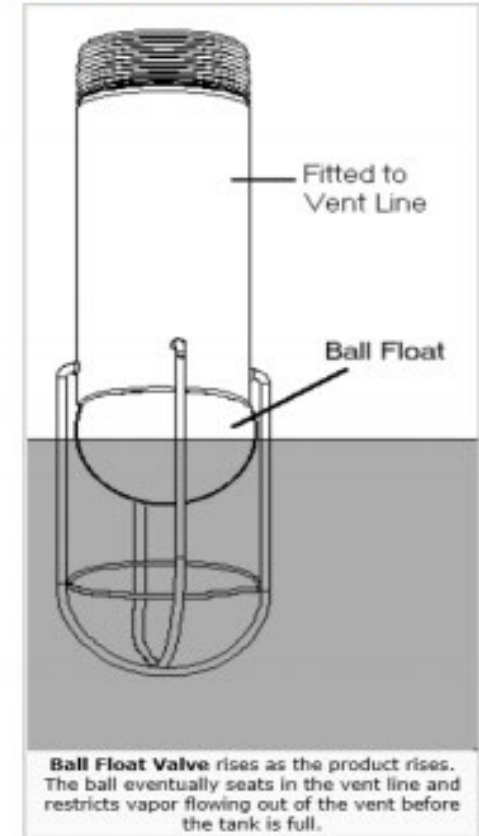
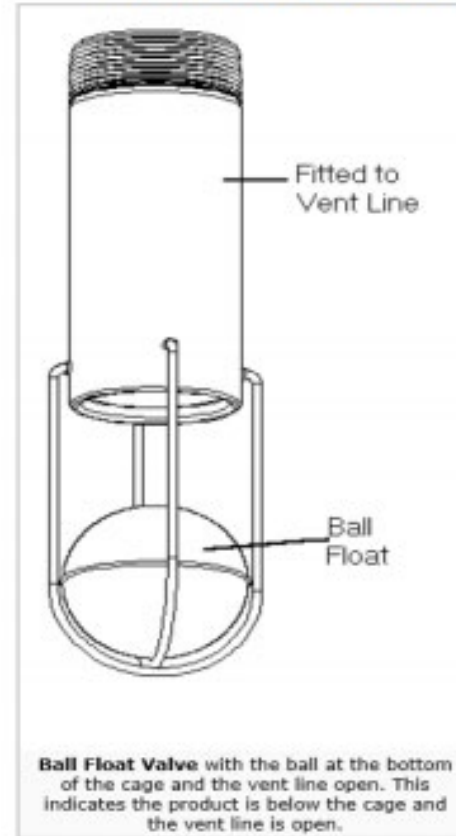


# Flow Restriction Device Testing

The purpose of the operability inspection is to verify that the ball float valve is installed properly, operates as designed, and is set to restrict flow when the tank is no more than **90 percent** full.

The ball float valve assembly is removed from the tank, inspected for proper operation and measured to ensure that the ball float assembly is the proper dimension to restrict flow into the tank when it is no more than **90 percent** full.

Ball Float Valves in Open and Closed Positions



# Flow Restriction Device Testing

1. Remove the ball float valve assembly from the tank.
2. Visually inspect the ball float and cage. Remove any debris or foreign objects.
3. Check the ball for holes and cracks. It should move freely in the cage. Check for corrosion that affects the operation of the device.
4. Check the vent orifice in the vent-restriction pipe. It must be open and located near the top of the tank.
5. Use the ball float valve manufacturer's installation procedure to determine if vapor flow will be restricted when the tank is no more than 90 percent full.
6. If the ball float valve does not function as designed, flow restriction does not occur until the tank is more than 90 percent full, or the tank-top fittings are not vapor-tight, the ball float device **FAILS** the inspection.

Ball float valve overfill prevention devices are still allowed on UST systems installed in Tennessee prior to October 13, 2021, and can remain in existing UST systems after October 13, 2021, if the devices pass the operability testing requirements.

**FLOW RESTRICTION DEVICES CAN NOT BE REPAIRED OR REPLACED AFTER OCTOBER 13, 2018**



# Overfill Equipment Devices - Operation and Testing

## Important Information

1. Tank compartment ID#, tank size, and tank material of construction must be verified with the DUST notification form. If any information is incorrect, an amended notification form shall be submitted.
2. If using the tank calibration chart or ATG setup for volume and diameter verification; a physical measurement is also required.
3. If multiple overfill devices are installed, all devices must be operability tested.
4. Automatic shutoff devices with flow restriction and automatic shutoff devices; the flapper must activate at a level below the ball float nipple, the automatic flapper device must activate FIRST.



# Overfill Prevention Equipment Testing - RECORDKEEPING

The three-year overfill prevention equipment operability test results must be maintained for **3** years for all overfill prevention equipment devices.

Ball float valve overfill prevention devices can be installed on UST systems in Tennessee prior to October 13, 2021, and can remain in existing UST systems after October 13, 2021, if the overfill prevention devices can pass the required operability testing requirements.

**FLOW RESTRICTION DEVICES CAN NOT BE REPAIRED OR REPLACED AFTER OCTOBER 13, 2018**

Overfill prevention equipment test results can be maintained on the PEI RP-1200 form or on a form approved by the Division. The Division currently has a draft overfill prevention device test form.

# Temporarily Out of Service (TOS) USTs

Definition: A UST system is empty when all materials have been removed using commonly employed practices so that no more than one-inch (1") of residue remains in the system.

## **TOS Requirements:**

- Cathodic protection system (if present) must remain operational which includes:
  - The two most recent 3 Year Cathodic Protection tests.
  - Three most recent 60 Day Rectifier Readings (impressed current).
- If TOS more than 3 months, pumps, lines, manways and ancillary equipment must be secured.
- If the TOS UST system is empty, no monthly release detection is required.
- Release detection must be performed when greater than one-inch is in the UST system.

## **New TOS Requirements as of June 15, 2021:**

- TOS UST systems are required to have spill and overflow prevention equipment installed.
- If TOS UST system is empty, the three-year spill and overflow device testing is not required.
- Three-year spill and overflow device testing is required when greater than one-inch is in the UST system.

# Industry Reaction to Flow Restriction Devices

- National Fire Protection Association (NFPA) 30A- ball floats not recommended since 2003
- Fiberglass Tank and Pipe Institute White Paper (2016)
- Petroleum Equipment Institute (PEI-RP100, 2017)
- EPA Office of Underground Storage Tanks (2015)

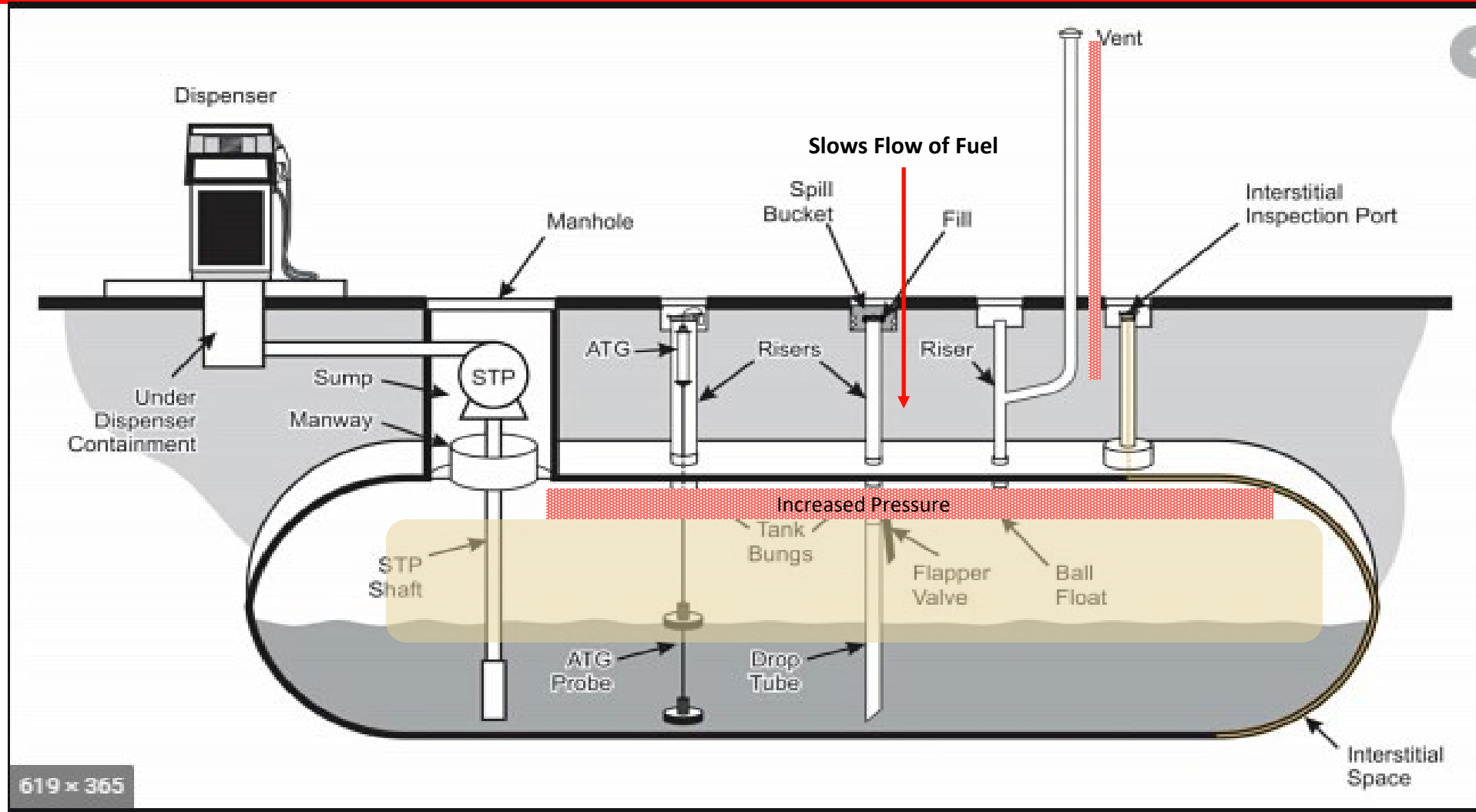
## CONCERNS

- 1) Over pressurization- tank integrity
- 2) Potential interference with flapper valve operation
- 3) Vapor discharge into the environment after deliveries
- 4) Not compatible with UL listed fiberglass tanks due to excessive pressure buildup
- 5) Have resulted in releases to the environment

Ball float valves are still allowed for installation on UST systems installed in Tennessee prior to October 13, 2021, and can remain in the UST system after October 13, 2021, if the device passes the operability testing requirements.



# UST System Equipment Installation Example



619 x 365



# Announcements

Local Field Office Contacts- [https://www.tn.gov/content/dam/tn/environment/underground-storage-tanks/documents/info/ust\\_efo-map.pdf](https://www.tn.gov/content/dam/tn/environment/underground-storage-tanks/documents/info/ust_efo-map.pdf)

## **Contractor / Vendor**

Thursday, August 26, 2021, Sump Testing

Thursday, September 2, 2021, Release Detection

Thursday, September 9, 2021, Walkthroughs

Thursday, September 15, 2021, Generators / Dual Use UST Systems

## **Owner / Operator**

Thursday, September 23, 2021, General New Rule Overview

Thursday, September 30, 2021, General New Rule Overview

Thursday, October 14, 2021, General New Rule Overview

All Webinars begin at 10AM ET / 9AM CT

Drafts of updated TN-UST Technical Chapters- <https://www.tn.gov/environment/program-areas/ust-underground-storage-tanks/ust/new-rules.html>

UST Compliance Toolbox- <https://www.tn.gov/environment/program-areas/ust-underground-storage-tanks/ust/operator-training/educational-tools.html>

# Any Questions or Comments on the New Rules for Spill and Overfill Equipment?

