Missouri's UST Rules

Overfill Prevention Device Testing

Presented by Brian Pottebaum

R&A

RISK PROFESSIONALS

What is an overfill?

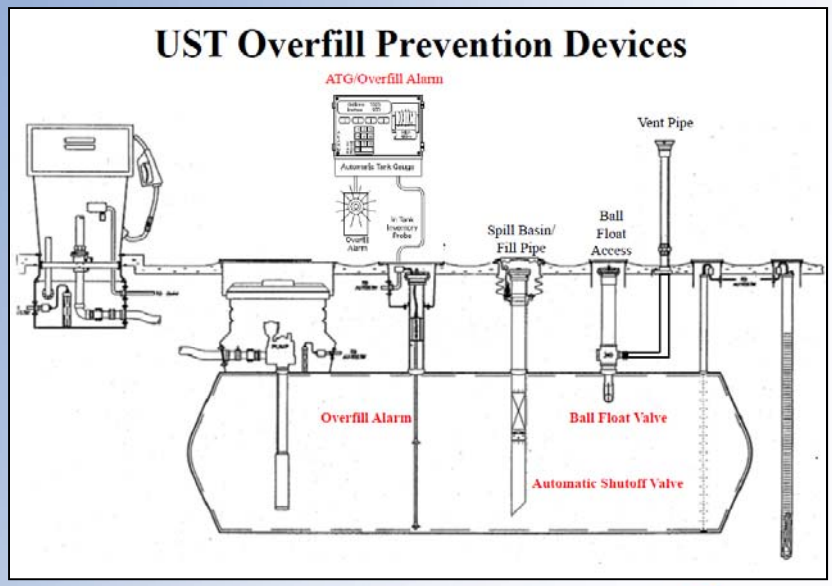
What is overfill prevention?

Overfill Prevention

<u>Overfill prevention</u> is the equipment installed on/in the UST to prevent a tank from being filled too full.

Examples:

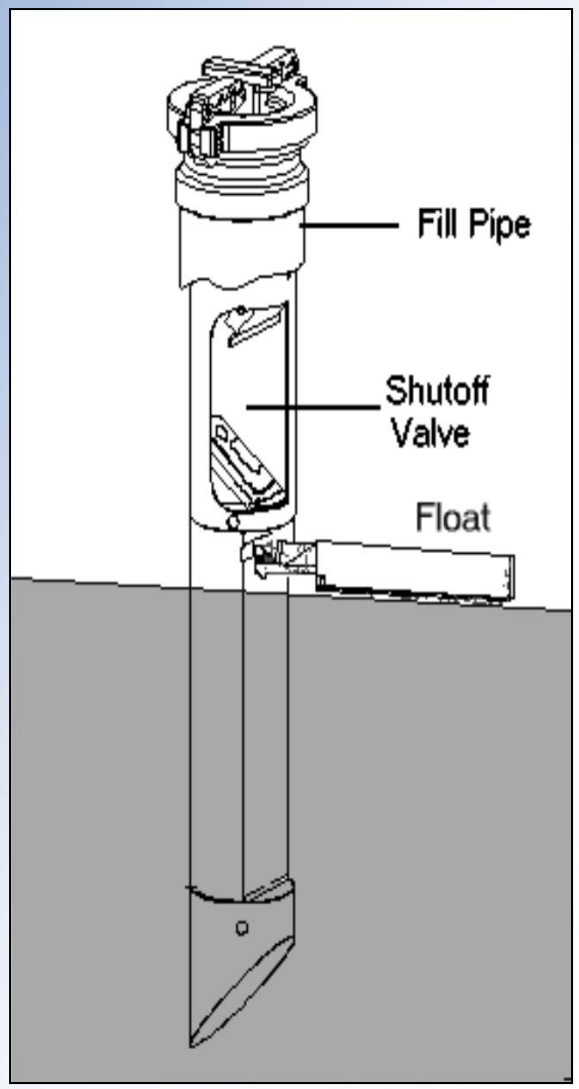
- Shutoff Valve
- Overfill Alarm
- Ball Float Valve



Overfill Prevention

Automatic Shutoff Device (Valve)

- Mechanical device installed in drop tube within fill pipe riser
- Positioned and aligned so float arm is not obstructed
- Must be set at 95% of tank capacity
- Requires “liquid-tight” delivery hose connection
- Not to be used with pressurized fills
  - Gravity delivery/transfer only



Automatic Shutoff Valve

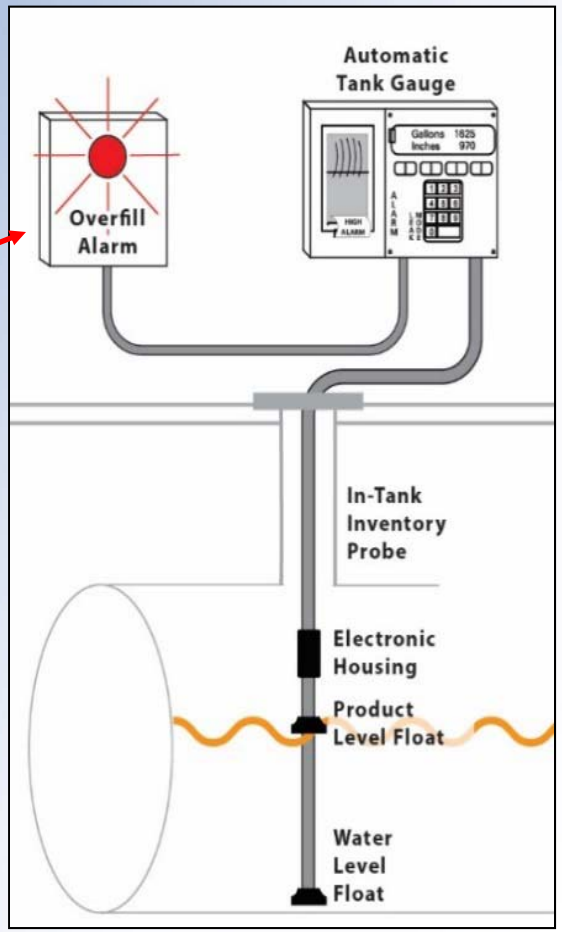
Keeping It Clean: Making Safe And Spill-Free Motor Fuel Deliveries
EPA, Environmental Media Center, December 1992

Shutoff Device in Tank

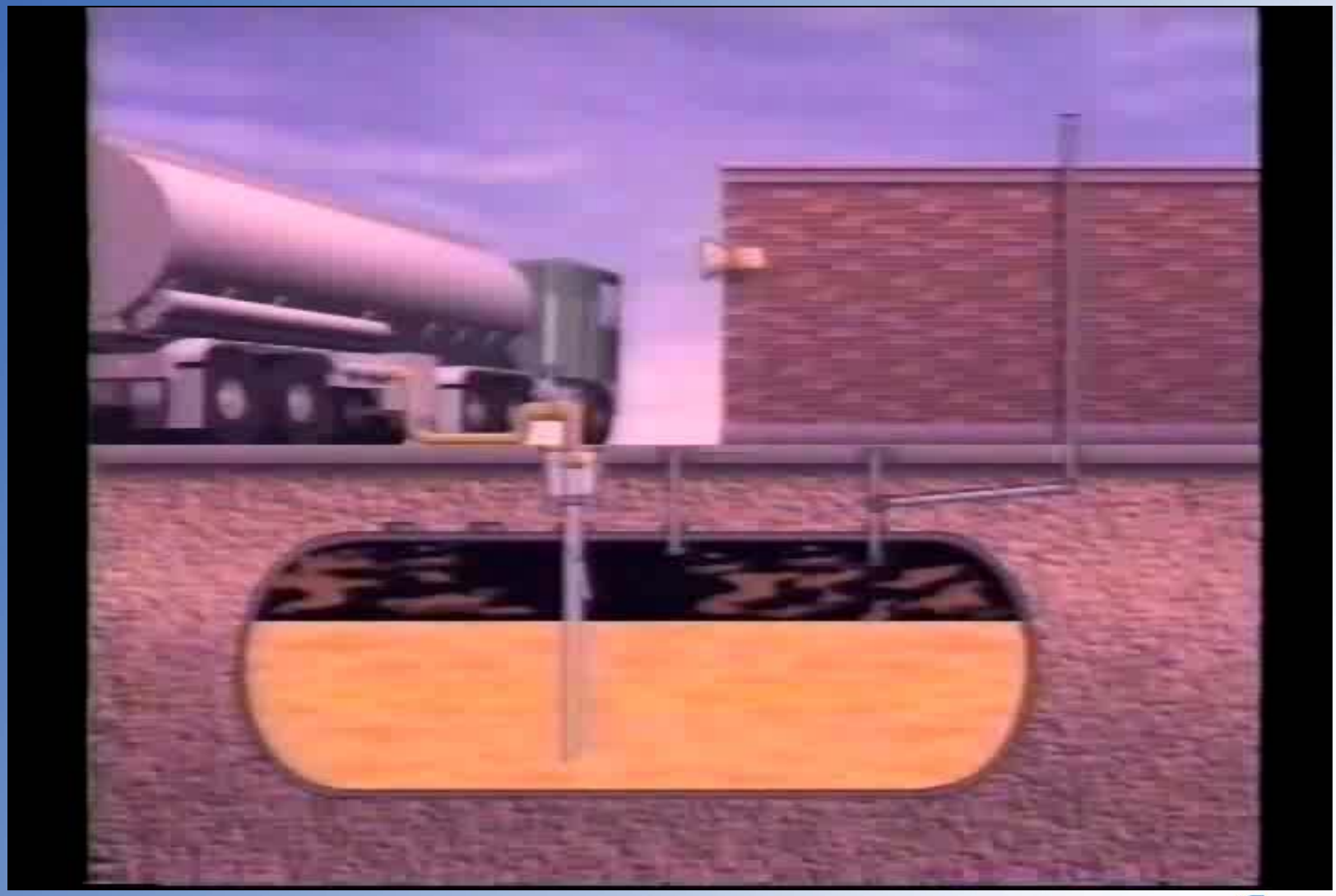
Overfill Prevention

Overfill Alarm

- Electronic device that activates an audible and/or visual warning to delivery personnel
- Alarm located near tank fill area
- Properly identified/labeled
- Set to alarm at 90% of tank capacity



Overfill Alarm



Keeping It Clean: Making Safe And Spill-Free Motor Fuel Deliveries
EPA, Environmental Media Center, December 1992

Overfill Alarm

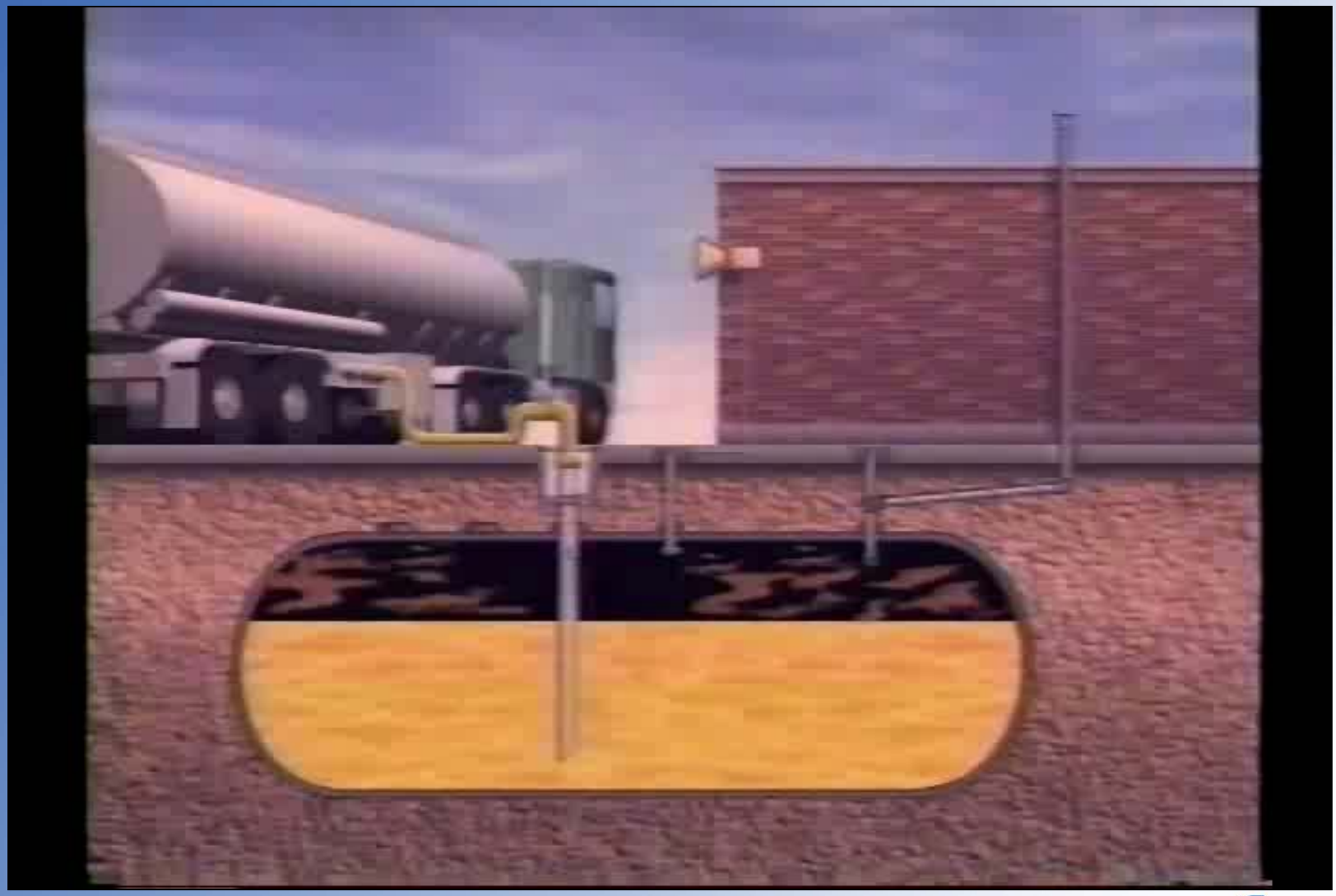
R&A

Overfill Prevention

Ball Float Valve

- aka “vent restriction device” and “float-vent valve”
- Mechanical device installed on vent pipe within tank that restricts vapor flow as UST gets close to full
- Set to restrict flow at 90% of tank capacity
- Requires “tight” tank, including other tank risers and spill basin drain
- Not allowed on new installs after 12/31/2011

Ball Float Valve



Keeping It Clean: Making Safe And Spill-Free Motor Fuel Deliveries
EPA, Environmental Media Center, December 1992

New Requirement

Overfill Prevention Equipment Inspections…..per EPA

Beginning on October 13, 2018 owners and operators must have their overfill prevention equipment inspected for proper operation at least once every three years. Overfill prevention equipment installed after October 13, 2015 must be inspected for proper operation at installation and then once every three years. Note that most installation codes of practice require inspecting overfill prevention equipment at installation – this would qualify as the first inspection. When inspecting, owners and operators must at a minimum ensure the overfill prevention equipment is set to activate at the correct level in the tank (the level depends on the type of overfill device) and will activate when regulated substances reach that level.

Overfill prevention equipment must be inspected according to one of the following:

- Requirements developed by the **manufacturer** (owners and operators may only use this option if the manufacturer has developed inspection requirements)
- A **code of practice** developed by a nationally recognized association or independent testing laboratory….PEI RP 1200
- Requirements determined by the implementing agency (DNR) to be no less protective than those developed by the manufacturer or in the code of practice

Owners and operators must maintain records of overfill prevention equipment inspections for at least three years.

MO DNR Proposed Rule --- Inspection/ Testing of overfill prevention equipment every 3 years ***(Start in 2019 - It is due by Jan. 1, 2020)***

Existing Overfill Regulation

10 CSR 26-2.020(C) Spill and **Overfill Prevention** Equipment.

1. Except as provided in paragraph (1)(C)2. of this rule, to prevent spilling and overfilling associated with product transfer to the UST system, owners and operators must use the following spill and overfill prevention equipment:

A. Spill prevention equipment that will prevent release of product to the environment when the transfer hose is detached from the fill pipe (for example, a spill catchment basin). All delivery hose-fill pipe connections must be tight, lock-on connections; and

B. Overfill prevention equipment that will—

(I) Automatically **shut off** flow into the tank when the tank is no more than ninety-five percent (95%) full;

(II) Alert the operator with a highlevel alarm at least one (1) minute before overfilling with an **alarm** audible in the delivery area; or

(III) Alert the transfer operator when the tank is no more than ninety percent (90%) full by **restricting flow** into the tank.

(a) Ball float valves may only be used in tank systems with gravity deliveries, in suction systems if there are no check valves, except those contained within a building, and the tank system is tight so that it does not allow vapors to be released during a delivery after the ball float valve has closed.

(b) Ball float valves are not approved for use as overfill prevention equipment in **new tank systems** installed after **December 31, 2011**. Ball float valves may still be used in systems equipped with manifolded vent lines and vapor recovery equipment if the ball float valve is installed no lower than at ninety-eight percent (98%) full and the functioning overfill prevention equipment is installed no higher than ninety-five percent (95%) full.

(IV) For pressurized deliveries, overfill prevention equipment must be compatible and approved for use with pressurized deliveries.

Proposed Changes

10 CSR 26-2.020(C) Spill and **Overfill Prevention** Equipment.

1. Except as provided in paragraph (1)(C)2. of this rule, to prevent spilling and overfilling associated with product transfer to the UST system, owners and operators must use the following spill and overfill prevention equipment:

A. Spill prevention equipment that will prevent release of product to the environment when the transfer hose is detached from the fill pipe (for example, a spill catchment basin). All delivery hose-fill pipe connections must be tight, lock-on connections; and

B. Overfill prevention equipment that will—

(I) Automatically **shut off** flow into the tank when the tank is no more than ninety-five percent (95%) full;

(II) Alert the **transfer** operator with a highlevel alarm at least one (1) minute before overfilling with an **alarm** audible in the delivery area; or

(III) Alert the transfer operator when the tank is no more than ninety percent (90%) full by **restricting flow** into the tank.

(a) Ball float valves may only be used in tank systems with gravity deliveries, in suction systems if there are no check valves, except those contained within a building, and the tank system is tight so that it does not allow vapors to be released during a delivery after the ball float valve has closed.

(b) Ball float valves are not approved for use as overfill prevention equipment in **new tank systems** installed after **December 31, 2011**. ~~Ball float valves may still be used in systems equipped with manifolded vent lines and vapor recovery equipment if the ball float valve is installed no lower than at ninety-eight percent (98%) full and the functioning overfill prevention equipment is installed no higher than ninety-five percent (95%) full.~~

(c) When an overfill prevention device is replaced after July 1, 2017, a ball float valve may not be used.

(IV) For pressurized deliveries, overfill prevention equipment must be compatible and approved for use with pressurized deliveries.

C. All spill and overfill prevention equipment must be installed, inspected, maintained and replaced in accordance with 10 CSR 26-2.030.

Proposed Changes

10 CSR 26-2.030 Spill and Overfill Control for In-Use Underground Storage Tank Systems

(1) Owners and operators must ensure that releases due to spilling or overfilling do not occur. The owner and operator must ensure that the volume available in the tank is greater than the volume of product to be transferred to the tank before the transfer is made and that the transfer operation is monitored constantly to prevent overfilling and spilling.

(2) The owner and operator must report, investigate, and clean up any spills and overfills in accordance with 10 CSR 26-2.053.

(3) -- (4) Skip [related to spill basins]

(5) Owners and operators must ensure their overfill prevention equipment is operating properly and will prevent releases to the environment by conducting a test or inspection of the equipment at least triennially. At a minimum, the test or inspection must ensure that overfill prevention equipment is set to activate at the correct level specified in 10 CSR 26-2.020 and will activate when the regulated substance reaches that level. Tests or inspections must be conducted in accordance with one of the following criteria:

Proposed Changes

(A) Requirements developed by the manufacturer, but only if the test or inspection confirms that all portions of the overfill device are intact and functional. (Note: This option may only be used if the manufacturer has developed testing requirements. Self-testing apparatus may only be used if approved by the department as a valid functionality test); or

(B) Petroleum Equipment Institute RP 1200-12, *Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities*. This document is incorporated by reference without any later amendments or modifications; or

(C) Other department methods approved by the department, which may include a code of practice developed by a nationally recognized association or independent testing laboratory, determined to be no less protective of human health and the environment than the requirements listed in paragraphs 1. and 2.of this subsection.

(6) The first test of the spill prevention equipment and the first test or inspection of the overfill prevention equipment required by this rule is due no later than January 1, 2020.

(7) If a tank has been out of use for more than twelve (12) months, equipment must be confirmed operational with a test of the spill prevention equipment and an inspection or test of the overfill prevention equipment, prior to bringing back in-use.

(8) Owners and operators must maintain the following records, in accordance with 10 CSR 26-2.034, for spill and overfill prevention equipment:

A. Test and/or inspection records must be maintained for three (3) years; and/or

B. When using interstitial monitoring, records must be maintained for twelve (12) months.

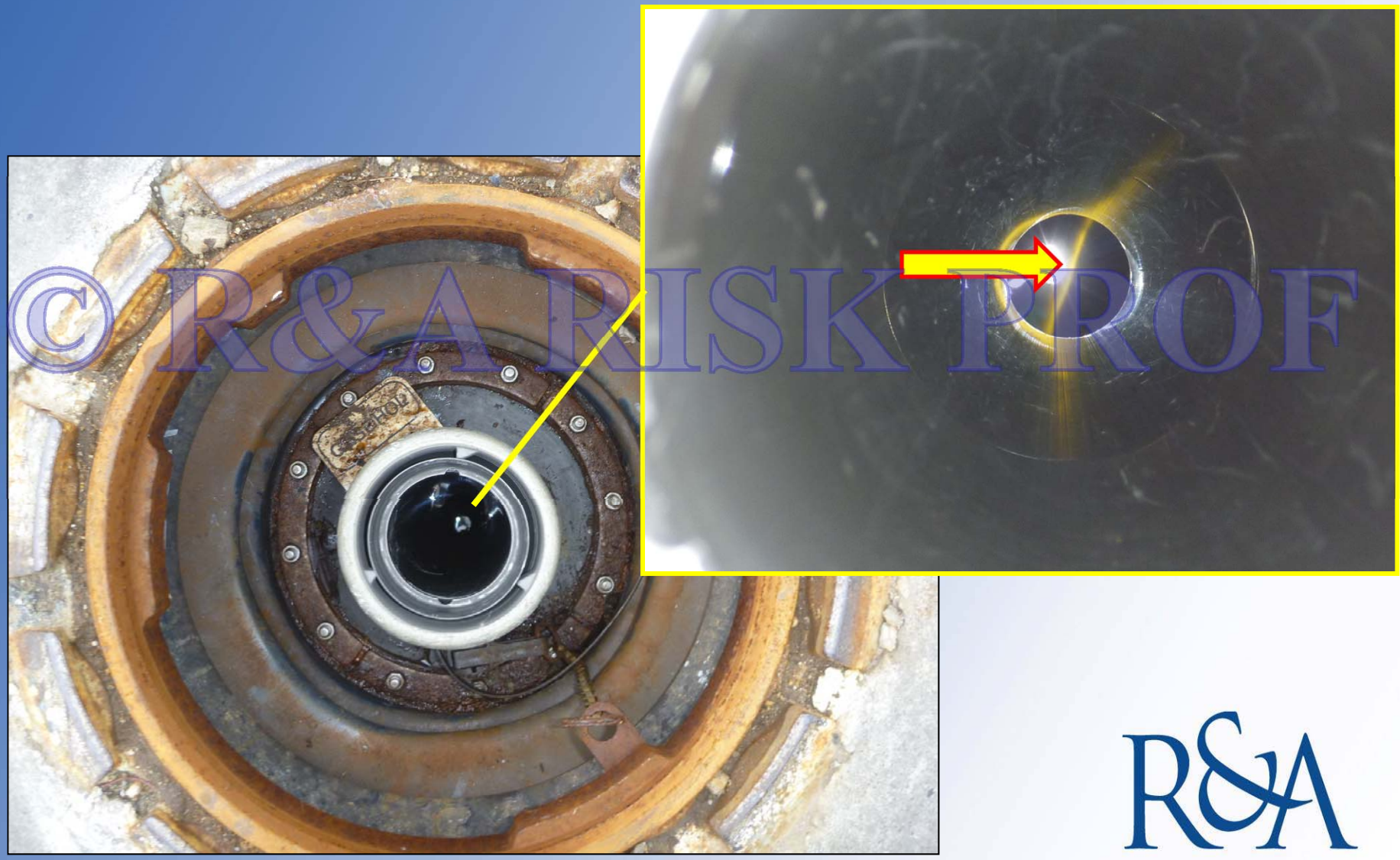
Why are we testing?

R&A

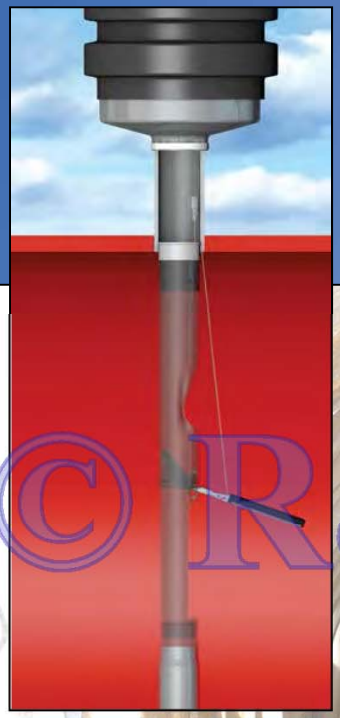
BECAUSE:

1) Devices wear out,
2) Devices get installed incorrectly, and
3) Devices get disabled/removed

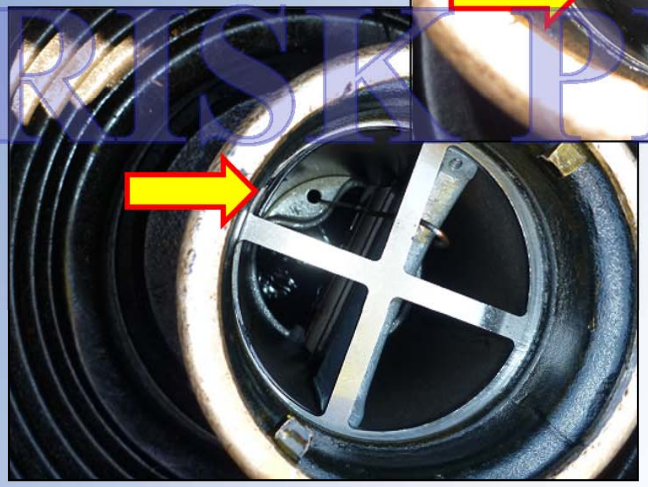
Incorrect Installation



Incorrect Installation



Obvious Manipulation



R&A

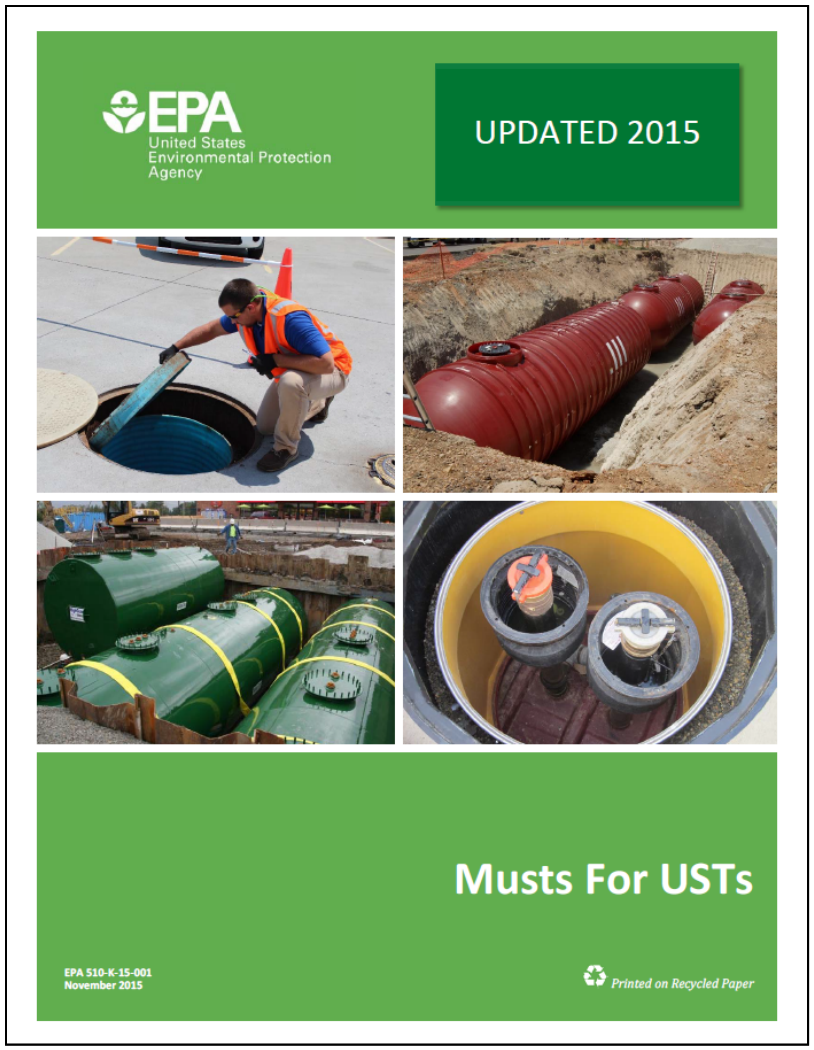
R&A

R&A

How are we supposed to do it?

FREE --- EPA Resources

https://www.epa.gov/ust



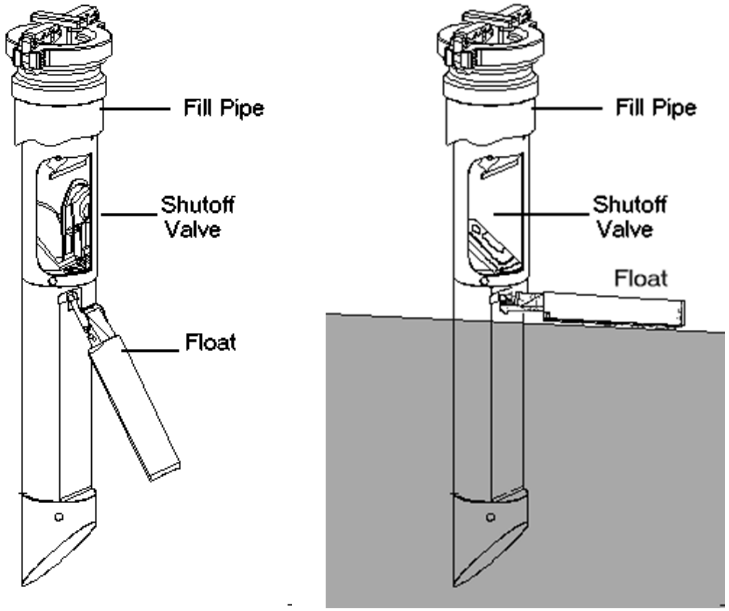
Checklist For Automatic Shutoff Devices

Automatic Shutoff Devices	
Description	Automatic shutoff devices are mechanical devices installed in the fill pipe riser to slow down and stop delivery when product reaches a certain level in the tank.
Perform These O&M Actions	☐ **No later than October 13, 2018, you must conduct the first 3 year inspection of your overfill device. This inspection should be conducted by a person qualified to conduct overfill inspections. The purpose of the inspection is to make sure the automatic shutoff device is functioning properly and the device will shut off fuel flowing into the tank at 95 percent of the tank capacity or before the fittings at the top of the tank are exposed to fuel. See page 42 for a sample recordkeeping form for overfill equipment inspections.** ○ **Make sure the float operates properly.** ○ **Make sure there are no obstructions in the fill pipe that would keep the floating mechanism from working.** ☐ You should post signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.
Keep These O&M Records	☐ **You must maintain all records of the inspection for three years.** ☐ **If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel (or any other regulated substance identified by your implementing agency), you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including overfill prevention equipment, for as long as the UST system stores the regulated substance.**

Reminder --- Inspection/ Testing of overfill prevention equipment ***(Start in 2019 - It is due by Jan. 1, 2020)***

Flapper Valve/ Automatic Shutoff

- Test every 3 years
- Remove to inspect
- Set to 95% (measure)
- Functions properly
- Refer to manufacturer protocol



Open

Closed

“Self-testing” Overfill Devices

Recently approved**

Probably Not

Checklist For Overfill Alarms

Overfill Alarms	
Description	Overfill alarms activate an audible or visual warning to delivery personnel when the tank is either 90 percent full or is within one minute of being overfilled. Electronic overfill alarm devices have no mechanism to shut off or restrict flow.
Perform These O&M Actions	☐ No later than October 13, 2018, you must conduct the first 3 year inspection of your overfill device. This inspection should be conducted by a person qualified to conduct overfill inspections. The purpose of the inspection is to make sure the electronic overfill alarm is functioning properly and the alarm activates when the fuel reaches 90 percent of the tank capacity or is within one minute of being overfilled. See page 42 for a sample recordkeeping form for overfill equipment inspections. ○ Ensure that the alarm can be heard or seen from where the tank is fueled. ○ Make sure that the electronic device and probe are operating properly. ☐ You should post signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.
Keep These O&M Records	☐ You must maintain records of the inspection for three years. ☐ If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel (or any other regulated substance identified by your implementing agency), you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including overfill prevention equipment, for as long as the UST system stores the regulated substance.

Reminder --- Inspection/ Testing of overfill prevention equipment ***(Start in 2019 - It is due by Jan. 1, 2020)***

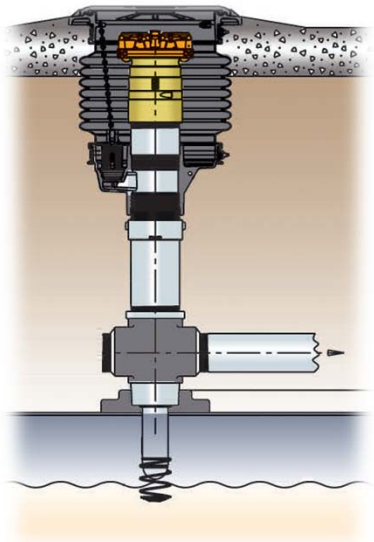
Overfill Alarm

- Test every 3 years
- Check at ATG and outside
- Can combine with ATG operability test
- Remove probe/sensor
- Refer to mfg protocol

Checklist For Ball Float Valves

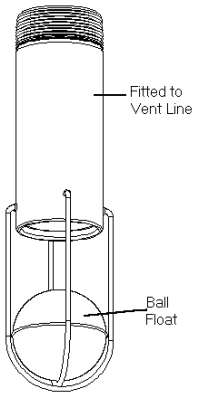
Ball Float Valves	
Description	Ball float valves are a type of overfill protection device that function by restricting vapor flow in an UST as the tank gets close to being full.
Perform These O&M Actions	☐ No later than October 13, 2018, you must conduct the first 3 year inspection of your overfill device. This inspection should be conducted by a person qualified to conduct overfill inspections. The purpose of the inspection is to make sure the ball float valve is functioning properly and will restrict fuel flowing into the tank at 90 percent of the tank capacity or 30 minutes prior to overfilling. See page 42 for a sample recordkeeping form for overfill equipment inspections. o Ensure the air hole is not plugged. o Make sure the ball cage is still intact. o Ensure the ball still moves freely in the cage. o Make sure the ball still seals tightly on the pipe. ☐ You should post signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.
Keep These O&M Records	☐ You must maintain records of the inspection for three years. ☐ If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent iodiesel (or any other regulated substance identified by your implementing agency), you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including overfill prevention equipment, for as long as the UST system stores the regulated substance.

Reminder --- Inspection/ Testing of overfill prevention equipment ***(Start in 2019 - It is due by Jan. 1, 2020)***

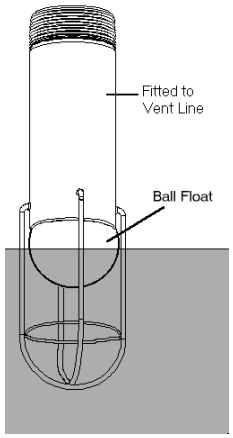


Ball Float Valve/ Automatic Flow Restrictor

- Test every 3 years
- Remove to inspect
  - May have to dig to tank-top?
  - Video ok? Probably not…
- Set to 90% (measure)
- Functions properly
- Refer to mfg protocol?



Open



Closed

Cannot be installed after July 1, 2017

Sample Recordkeeping Form For Overfill Equipment Inspections (For Use By A Qualified Inspector)

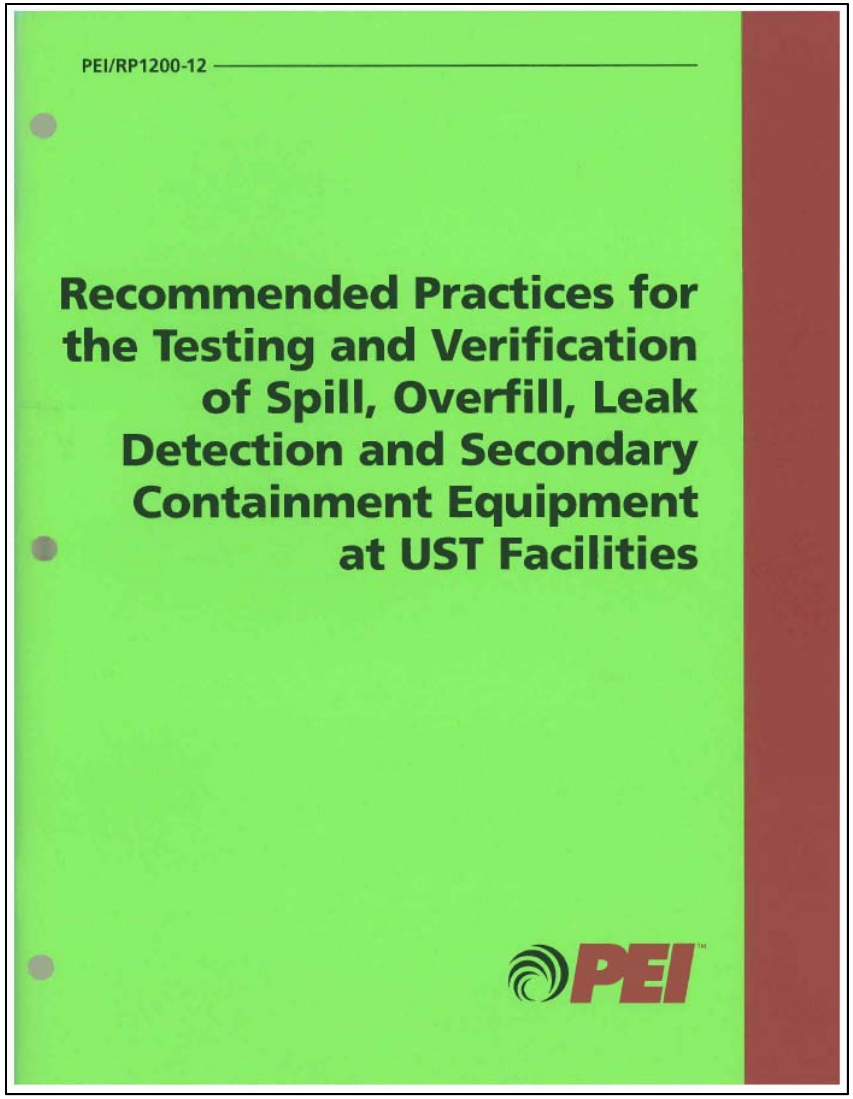
Inspection Date: ____/____/____
Facility Name/ID: _____

Tank number					
Product stored					
Overfill equipment manufacturer					
Type (circle one)	Automatic shutoff device Ball float valve Overfill alarm	Automatic shutoff device Ball float valve Overfill alarm	Automatic shutoff device Ball float valve Overfill alarm	Automatic shutoff device Ball float valve Overfill alarm	Automatic shutoff device Ball float valve Overfill alarm
Automatic Shutoff Device Inspection					
Drop tube removed from tank?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Drop tube and float mechanisms are free of debris?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Float moves freely without binding and poppet moves into flow path?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Bypass valve in the drop tube (if present) is open and free of blockage?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Flapper is adjusted to shut off flow at 95% capacity?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Overfill Alarm Inspection					
Electronic device and probe are operating properly?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Alarm activates at 90% capacity or within one minute of overfill?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Alarm can be heard or seen from where the tank is fueled?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Ball Float Valve Inspection					
Tank top fittings are vapor-tight and leak-free?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Ball float cage free of debris?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Ball is free of holes and cracks and moves freely in cage?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Vent hole in pipe is open and near top of tank?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Ball float pipe is proper length to restrict flow at 90% capacity?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Inspection Results (Circle One) (No to any question indicates a test failure.)	**Pass / Fail**	**Pass / Fail**	**Pass / Fail**	**Pass / Fail**	**Pass / Fail**
Comments					

Inspecting company: _____ Inspector's signature: _____
Inspector's name: _____

Keep this record for three years.

Acceptable Code of Practice



Preference is per manufacturer, however this provides generic instruction in absence of mfg. procedures

Intended for:

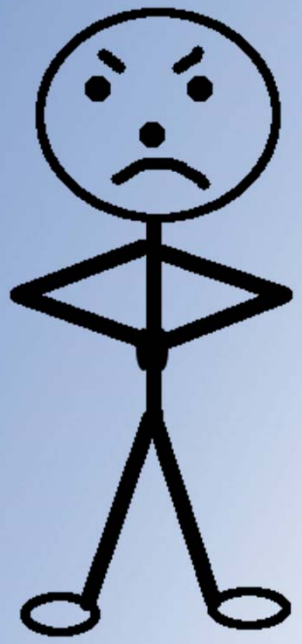
- Facility operators and
- Testing personnel

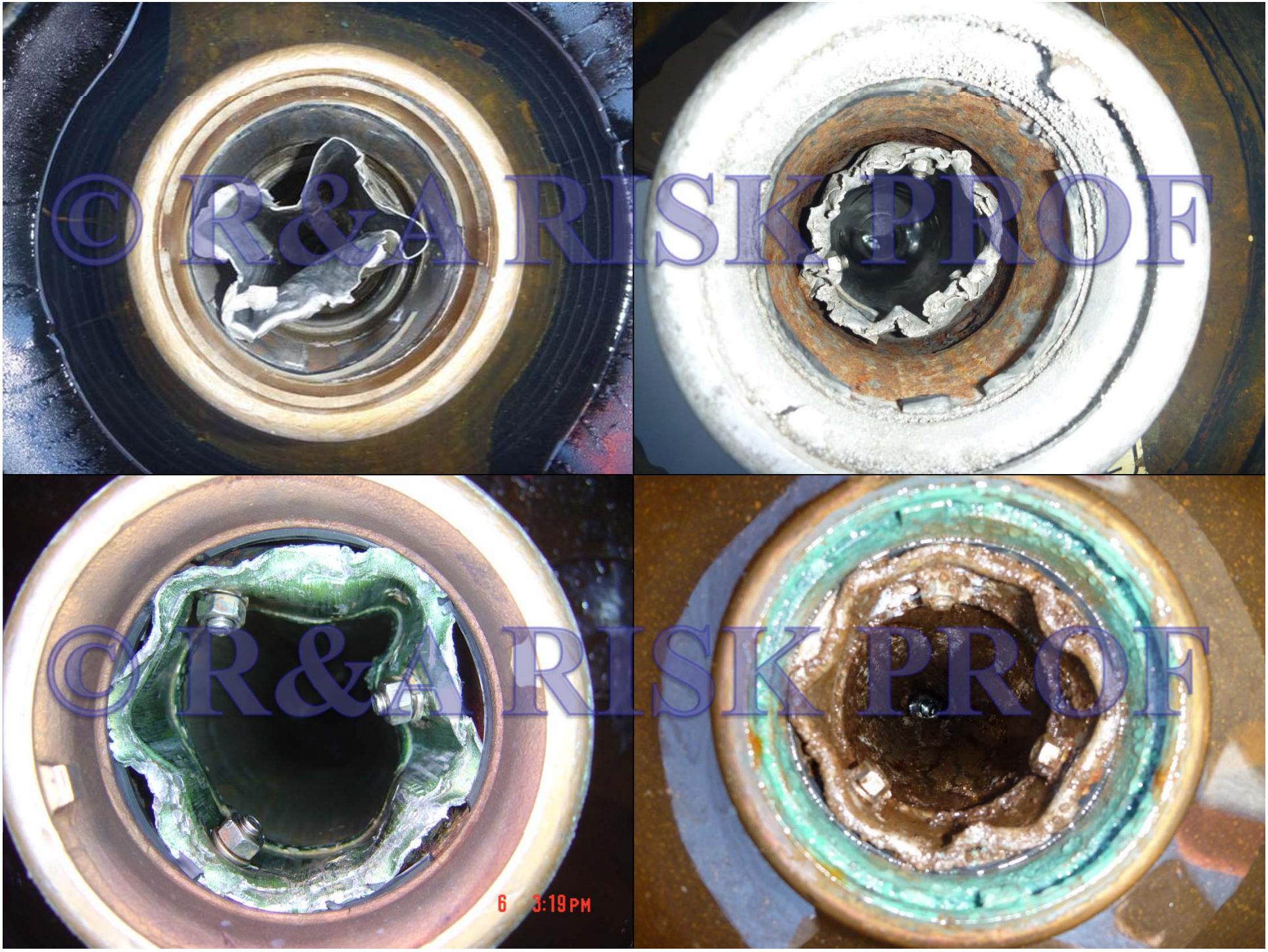
Applies to:

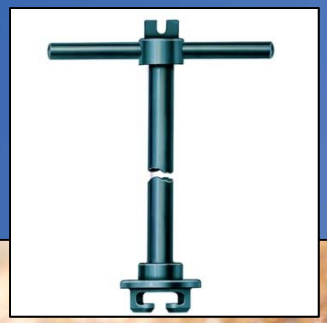
- USTs
- Connected underground piping
- Underground ancillary equipment and containment systems

http://www.pei.org/rp1200

What do we expect to see?




© R&A RISK PROF
© R&A RISK PROF
6 3:19 PM



Overfill Testing Summary

- At Install then every **3** years thereafter
- Post-Repair testing (w/in 30 days)
- Tested before install is considered “complete” for new installs after 7/1/2017
- Keep test results for 3 years (next test)

✓ Confirm all parts functioning/ free to move

✓ Confirm will shutoff as installed

- 95% flapper valve
- 90% ball float valve
- 90% alarm

Due at install or by <u>Jan. 1, 2020</u>

Questions?