Underground Storage Tank Overfill Prevention

Presented by

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DISCLAIMER

- The information in this presentation is a summary of requirements specified in California Underground Storage Tank (UST) Regulations, industry standards, and manufacturer procedures for inspecting / testing a few specific types of equipment commonly encountered at UST facilities. It is not all-inclusive. There is no substitute for reading the full text of the regulations and other documents referenced. This information should not be interpreted as endorsement or non-endorsement of any manufacturer's equipment.

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OBJECTIVES

The Objectives of this class are to introduce UST inspectors and UST Service Technicians to:

- Requirements for providing UST overfill prevention
- Requirements for inspecting overfill prevention equipment
- A brief summary of how to inspect specific types of overfill prevention equipment and confirm functionality and proper activation level

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DEFINITIONS

- "**Ball Float" or "Ball Float Valve**" A **flow restrictor** device installed inside the tank on the inlet of the vent riser pipe (and the vapor return riser if the vent and vapor recovery lines enter the tank separately). Rising product lifts a ball, which seals the vent line. Continued filling compresses vapors trapped in the tank, causing back pressure to slow product delivery. The tank must be vapor tight for this to work.

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DEFINITIONS

- "**Drop Tube**" A pipe installed inside a tank fill riser that transfers product from the tank fill connection point to the bottom of the tank. Usually made of aluminum or non-ferrous alloy and cut at an angle at the lower end to prevent build-up of static charge from flammable liquid flow.

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DEFINITIONS

- "**Extractor Fitting**" A fitting installed on a riser pipe on top of a tank to allow a ball float valve to be removed.

Extractor Fittings

Extractor Wrench

Extractor Caps

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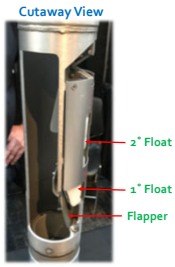
DEFINITIONS

- "**Overfill Prevention Valve" aka "Flapper Valve**" A device installed in a tank's drop tube to automatically **shut-off** flow of product into the tank at a pre-set point.

[Note: These devices contain floats which may be inside or outside the valve body. Rising product lifts the float to a point where it closes a "flapper," which prevents further delivery of product. Many valves are two-stage types, with a primary (lower) float which restricts delivery to the tank, causing back-pressure on the delivery hose, which "bucks" to warn the delivery driver to halt further delivery. If filling continues, the second stage (upper) float triggers complete shutoff of delivery.]



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DEFINITIONS

- "**Ullage**" [uhl-ij] The portion of the tank interior that is above liquid level (aka headspace or vapor space).
- "**Voluntary consensus standards**" means standards that shall be developed after all persons with a direct and material interest have had a right to express a viewpoint and, if dissatisfied, to appeal at any point. [23 CCR §2611]

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OVERFILL PREVENTION EXEMPTION

- The local UST Program Unified Program Agency (UPA) *may* waive the requirement for overfill prevention equipment where the tank inlet exists in an observable area, the spill container is adequate to collect any overfill, and the tank system is filled by transfers of no more than **25 gallons** at one time. [23 CCR §2635(c)(2)]

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OVERFILL PREVENTION OPTIONS

- All USTs not exempted pursuant to 23 CCR §2635(c)(2) must be equipped with an overfill prevention system *which does not allow for manual override* and meets one of 5 allowed options. [23 CCR §2635(c)(1)]
- We will refer to the five options as Options A1, A2, B, C and D.

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OVERFILL PREVENTION OPTIONS

Options A1 & A2

- 23 CCR §2635(c)(1)(A)
  - Alert the transfer operator when the tank is **90%** full by **restricting flow** into the tank; **or**
  - Alert the transfer operator when the tank is **90%** full by triggering an **audible and visual alarm**.

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OVERFILL PREVENTION OPTIONS

Option B

- 23 CCR §2635(c)(1)(B)
  - **Restrict flow** into the tank at least **30 minutes** before the tank overfills, provided the restriction occurs when the tank is filled to no more than **95%** of capacity; **and**
  - Activate an **audible alarm** at least **5 minutes** before the tank overfills.

*Note: The requirement to restrict flow 30 minute prior to overfilling means this option is only suitable for **very large tanks***

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OVERFILL PREVENTION OPTIONS
Option C

- 23 CCR §2635(c)(1)(C)

- Provide **positive shut-off** of flow to the tank when the tank is filled to no more than **95%** of capacity.

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OVERFILL PREVENTION OPTIONS
Option D

- 23 CCR §2635(c)(1)(D)

- Provide **positive shut-off** of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.

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OVERFILL PREVENTION OPTIONS

- **Positive shut-off** is most often provided by a mechanical overfill prevention valve (aka "flapper valve") which closes to stop tank filling. Other options include hardware such as air-actuated or electrically-actuated valves.
- **Restriction of flow** is typically provided by a ball float valve on the vent riser pipe, which seals and creates back pressure to slow tank filling as the liquid level rises and compresses the vapors at the top of the tank.
- **Alarms** must be able to be seen/heard **at the tank fill location**.

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OVERFILL PREVENTION EQUIPMENT INSPECTION

- Overfill prevention equipment for USTs installed before 10/1/2018 must be inspected by 10/13/2018* and every 36 months thereafter; and within 30 days of completion of a repair. [23 CCR §2637.2(a)(1)]

- Overfill prevention equipment for USTs installed on or after 10/1/2018 must be inspected upon installation and every 36 months thereafter; and within 30 days of completion of a repair. [23 CCR §2637.2(a)(2)]

* If the initial inspection is done late, the following periodic inspection is due during or before October of 2021. [23 CCR §2620(e)]

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OVERFILL PREVENTION EQUIPMENT INSPECTION

- Inspections must:
  - Demonstrate that the equipment is set to activate at the correct level and will activate when the stored substance reaches that level. [23 CCR §2637.2(b)]

  - Be performed per manufacturer's guidelines or standards. If there are no manufacturer's guidelines or standards, the equipment must be inspected using an applicable method specified in an industry code or engineering standard. If there are no applicable manufacturer's guidelines, industry codes, or engineering standards, an inspection method approved by a state-registered PE must be used. [23 CCR §2637.2(b)]

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OVERFILL PREVENTION EQUIPMENT INSPECTION

- The UST owner/operator must notify the local Unified Program Agency (UPA) at least 48 hours prior to conducting the inspection. [23 CCR §2637.2(f)]

- Inspections must be performed by a UST Service Technician meeting the requirements of 23 CCR §2715(f). [23 CCR §2637.2(c)]

- Results of the inspection must be recorded on the "Overfill Prevention Equipment Inspection Report Form" located in Appendix IX of 23 CCR. [23 CCR §2637.2(d)]

- The UST owner/operator must submit a copy of the "Overfill Prevention Equipment Inspection Report Form" to the UPA within 30 days of completion of the inspection. [23 CCR §2637.2(e)]

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PREPARATION FOR EQUIPMENT INSPECTION

- Review California Environmental Reporting System (CERS) UST – Tank Information
- Tank Description
  - Tank Manufacturer
  - Tank Capacity
  - Date UST System Installed
  - Tank Configuration

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PREPARATION FOR EQUIPMENT INSPECTION

- Tank Manufacturer

Tank Description		
Tank ID# / CERS Tank ID#	Date UST System Installed	Tank Configuration
T-1 / 10149191-001	7/1/2001	A Stand-alone Tank
Tank Manufacturer	Date Existing UST Discovered	Number of Compartments in the Unit
Xerxes		1
Tank Capacity in Gallons	Date UST Permanently Closed	Additional Description
15000		

- Q. Why does this matter?
- A. Tank dimensions and capacities vary by manufacturer

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PREPARATION FOR EQUIPMENT INSPECTION

- Tank Capacity

Tank Description		
Tank ID# / CERS Tank ID#	Date UST System Installed	Tank Configuration
T-1 / 10149191-001	7/1/2001	A Stand-alone Tank
Tank Manufacturer	Date Existing UST Discovered	Number of Compartments in the Unit
Xerxes		1
Tank Capacity in Gallons	Date UST Permanently Closed	Additional Description
15000		

- Q. Why does this matter?
- A. Need to use the correct tank chart (i.e., capacity and diameter)

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PREPARATION FOR EQUIPMENT INSPECTION

- Date UST System Installed

Tank Description		
Tank ID# / CERS Tank ID#	Date UST System Installed	Tank Configuration
T-1 / 10149191-001	7/1/2001	A Stand-alone Tank
Tank Manufacturer	Date Existing UST Discovered	Number of Compartments in the Unit
Xerxes		1
Tank Capacity in Gallons	Date UST Permanently Closed	Additional Description
15000		

- Q. Why does this matter?
- A1. Determines what equipment configurations are allowed
- A2. Tank dimensions and capacities can vary depending on date of manufacture

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PREPARATION FOR EQUIPMENT INSPECTION

- Tank Configuration

Tank Description		
Tank ID# / CERS Tank ID#	Date UST System Installed	Tank Configuration
T-1 / 10149191-001	7/1/2001	A Stand-alone Tank
Tank Manufacturer	Date Existing UST Discovered	Number of Compartments in the Unit
Xerxes		1
Tank Capacity in Gallons	Date UST Permanently Closed	Additional Description
15000		

- Q. Why does this matter?
- A. Different compartments have different dimensions

Tank Configuration	Tank Configuration
A Stand-alone Tank	One in a Compartmented Unit
Number of Compartments in the Unit	Number of Compartments in the Unit
1	2

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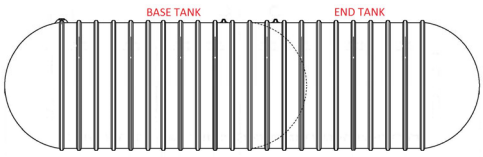
PREPARATION FOR EQUIPMENT INSPECTION

- Tank Configuration (Compartmented fiberglass tank)



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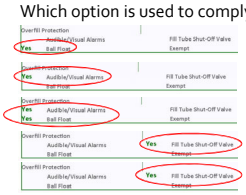
PREPARATION FOR EQUIPMENT INSPECTION

- Which option is used to comply with requirement for overfill prevention?



§2635(c)(1)(A) Option A1

§2635(c)(1)(A) Option A2

§2635(c)(1)(B) Option B

§2635(c)(1)(C) Option C

§2635(c)(1)(D) Option D

This determines what equipment needs to be inspected and at what level it must activate

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PREPARATION FOR EQUIPMENT INSPECTION

- Beware of…
- Ball floats interfering with operation of flapper valves
- Mechanical overfill prevention valves on used oil tanks *(will not work since a dry-break connection and minimum flow rate are required)*
- Incorrect tank diameter measurements due to fill risers threaded into buried manways and riser pipes extending into the tank
- Facilities with direct buried fill risers or single-wall underground vent lines wanting to switch to using audible & visual alarms *(okay only if UST installed before 7/2/1987)*

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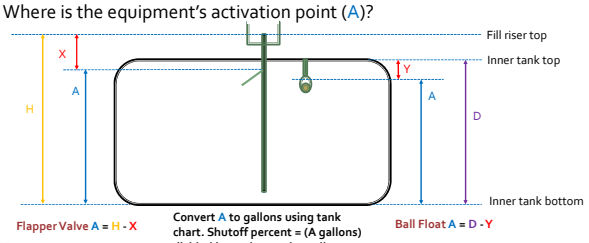
PREPARATION FOR EQUIPMENT INSPECTION

- Where is the equipment's activation point (A)?



Flapper Valve A = H - X

Convert A to gallons using tank chart. Shutoff percent = (A gallons) divided by tank capacity gallons times 100

Ball Float A = D - Y

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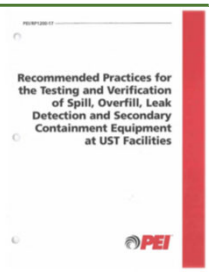
SUMMARY OF RP1200 INDUSTRY STANDARD

- The Petroleum Equipment Institute (PEI) publishes voluntary consensus (industry) standards.
- RP1200-17 is the 2017 edition of PEI's "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities"



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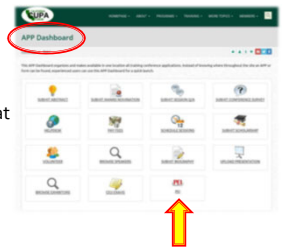
SUMMARY OF RP1200 INDUSTRY STANDARD

- The California CUPA Forum provides Unified Program Agency members free access to PEI standards via Techstreet Enterprise. Login to your account, access the APP Dashboard at https://calcupa.org/member-dashboard/index.html, and click on the PEI button.



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SUMMARY OF RP1200 INDUSTRY STANDARD

Inspection of Mechanical Overfill Prevention Valves

- Remove drop tube
- Visually inspect valve and float(s) for damage or corrosion
- Manually move float mechanism(s) to ensure free movement
- Confirm that the flapper will move into the product flow path
- If possible, verify that the bypass valve is open and free of blockage
- Using manufacturer's procedure, examine drop tube and shutoff valve to determine if product flow will shut off when tank is ≤95% full
- Reinstall drop tube
- Pass Criteria = Device functions as designed and complete shutoff of product flow occurs when tank is no more than 95% full

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SUMMARY OF RP1200 INDUSTRY STANDARD
Inspection of Ball Float Valves

- Verify that all tank-top fittings are vapor-tight
- Remove ball float assembly
- Visually inspect the float and cage and remove debris or foreign objects
- Check ball for holes and cracks, free movement in the cage, and corrosion affecting proper operation
- Check vent orifice to confirm that it is located near top of tank and open
- Using manufacturer's procedure, confirm that vapor flow is restricted when tank is ≤90% full
- Reinstall ball float
- Pass Criteria = Ball float functions as designed, flow restriction occurs when the tank is no more than 90% full, and tank-top fittings are vapor-tight
- Fail if tank is equipped with suction piping or coaxial Stage I vapor recovery

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SUMMARY OF RP1200 INDUSTRY STANDARD
Inspection of ATG Overfill Alarms

- Measure product level at ATG probe riser and compare to ATG console reading
- Verify that ATG is programmed to activate the external overfill alarm unit when the tank is ≤90% full
- Confirm that overfill alarm circuit is operational
- Activate overfill alarm to confirm operation
- Disconnect the ATG probe cable and remove probe from tank
- Inspect probe and confirm that floats move freely
- Reconnect ATG probe cable

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SUMMARY OF RP1200 INDUSTRY STANDARD
Inspection of ATG Overfill Alarms *(continued)*

- Move fuel float to the middle of probe and confirm that ATG panel shows correct product height
- Slowly move fuel float up probe until overfill alarm triggers
- At point where alarm triggered, measure distance from bottom of probe to bottom of fuel float
- Using tank chart, find volume that corresponds to float height and determine percent of tank capacity
- Compare measurement to the value programmed in ATG console
- Reinstall probe
- Pass Criteria = Alarm activates when tank is ≤90% full and fuel level on ATG console agrees with stick reading

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"TESTABLE" OVERFILL PREVENTION VALVES

- While some manufacturers claim their overfill prevention valves can be inspected without being removed from the tank, their inspection procedures do not fully confirm that the overfill prevention equipment is set to activate at the correct level specified in 23 CCR §2635(c)(1) and will activate when regulated stored substance reaches that level.
- If a manufacturer's procedures do fully not satisfy both requirements of the inspection, the inspection method defaults to industry standard.

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OVERFILL PREVENTION VALVES

- There are three manufacturers whose equipment is approved for use with gasoline USTs, and their overfill valves can only be installed for the specific Air Quality Executive Order they are listed under.
  [Note: Diesel USTs can use any of the overfill valves with practically no limitations.]
- Each manufacturer has their own calculation procedures and functionally tests, and all inspectors must follow them when determining the actual shut off level and proper valve operation

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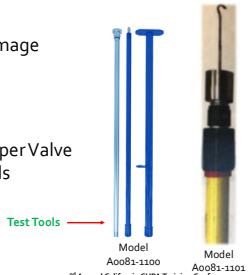
EMCO-WHEATON A1100 FLAPPER VALVES

- Remove valve from tank
- Inspect for corrosion / other damage
- Take measurements
- Use correct tank chart
- Confirm proper activation level
- Confirm Primary Float and Flapper Valve proper operation using test tools



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EMCO-WHEATON A1100 FLAPPER VALVES

- Newer valves have a "95%" reference mark. When product level reaches this point on the valve, shutoff of flow occurs.

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EMCO-WHEATON A1100 FLAPPER VALVES

To calculate Actual Shutoff Level for valves **with** reference mark…

- A = Distance from drop tube seal surface to tank bottom
- R = Distance from drop tube seal surface to 95% reference mark
- X = Shutoff product height = A – R
- Y = Tank internal diameter (100% volume height from tank chart)
- Find gallon readings for X & Y (tank chart)
- Shutoff % = X gallons /Y gallons x 100

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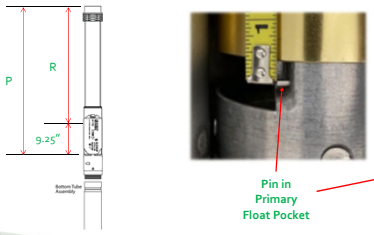
EMCO-WHEATON A1100 FLAPPER VALVES

- Older valves without reference mark.



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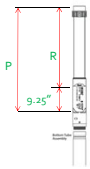
EMCO-WHEATON A1100 FLAPPER VALVES

To calculate Actual Shutoff Level for valves **without** reference mark…

- A = Distance from drop tube seal surface to tank bottom
- P = Distance from drop tube seal surface to pin in primary float pocket
- X = Shutoff product height = A – P + 9.25"
- Y = Tank internal diameter (100% volume height from tank chart)
- Find gallon readings for X & Y (tank chart)
- Shutoff % = X gallons /Y gallons x 100



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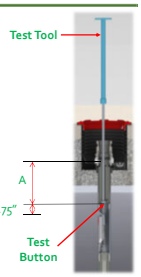
EMCO-WHEATON A1100-T FLAPPER VALVES

To calculate Actual Shutoff Level

- C = Distance from drop tube seal surface to tank bottom
- A = Distance from drop tube seal surface to test button
- X = Shutoff product height = C – A - 3.75"
- Y = Tank internal diameter (100% volume height from tank chart)
- Find gallon readings for X & Y (tank chart)
- Shutoff % = X gallons /Y gallons x 100



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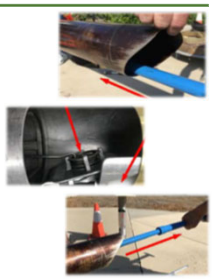
EMCO-WHEATON A1100 FLAPPER VALVES

- Slowly Insert the Model A0081-1101 test tool from the bottom of the lower tube until the hook end secures.
- With the flapper valve latched open, and the hook end secured, gently tug on the test tool, the flapper valve must remain open.
- Using a scribe tool, lift bottom left hand corner of the primary float to unlatch the flapper valve; the test tool should move about 3" downward and flapper will close.



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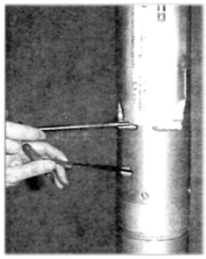
EMCO-WHEATON A1100EVR FLAPPER VALVES

- Confirm Primary Float and Flapper Valve functionality by removing the test plug using a 1/8" allen wrench.
- Using a 9/64" allen wrench placed inside opening min. 3 times attempt to turn wrench counter-clockwise. It should not turn.
- Using a scribe tool lift bottom left hand corner of the primary float.
- The 9/64" allen wrench now should turn approximately 90 degrees closing the valve .



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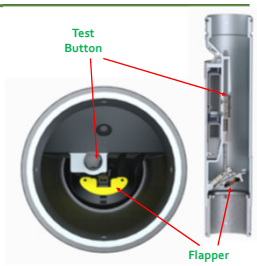
EMCO-WHEATON A1100-T FLAPPER VALVES

- Confirm flapper functionality by inserting model A0081-1100 Test Tool to depress test button and linkage

[Note: Test without removing the valve from the riser.]

- Shine light down interior of valve (alternatively, snap a photo). If reflective tape is visible, valve is OK



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EMCO-WHEATON A1100 FLAPPER VALVES

- Inspector must have current California UST Service Technician certification and manufacturer's training
  - Emco-Wheaton Phase I EVR and Phase II EVR Systems Certification

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FRANKLIN FUELING SYSTEMS (FFS) / EBW AUTOLIMITER® II FLAPPER VALVES

- Remove valve from tank
- Inspect for corrosion / other damage
- Open inspection port and confirm flapper functionality per "EBW Auto Limiter II Valve Component Inspection Procedure" on pages 10-12 of installation instructions
- Take measurements
- Use correct tank chart
- Confirm proper activation level

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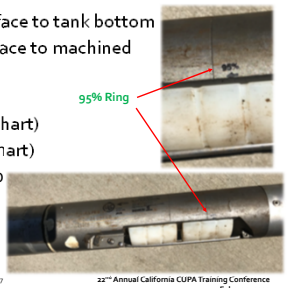
FFS / EBW AUTOLIMITER® II FLAPPER VALVES

- D = Distance from drop tube seal surface to tank bottom
- R = Distance from drop tube seal surface to machined ring on valve marked "95%"
- X = Shutoff product height = D – R
- Y = 100% volume height (from tank chart)
- Find gallon readings for X & Y (tank chart)
- Shutoff % = X gallons /Y gallons x 100



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FFS DEFENDER SERIES® FLAPPER VALVES

- Take measurements

Note: When you perform this procedure, do not remove the OPV assembly from the tank

- Remove valve from tank
- Inspect for corrosion / other damage
- Reinstall valve
- Confirm shutoff using remote FFS tool

Note: If required by a local agency, you can push flapper fully closed by inserting a non-sparking stick or rod (no larger than .75" diameter) through the remote test tool opening

- Use correct tank chart

Note: The Defender Series® is the only product currently available with full shutoff @ 95%.

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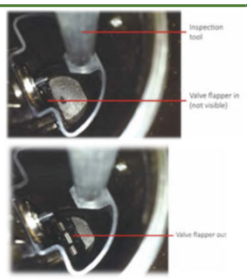
FFS DEFENDER SERIES® FLAPPER VALVES

- Valve actuation requires use of the correct Defender Series® overfill prevention valve remote testing tool



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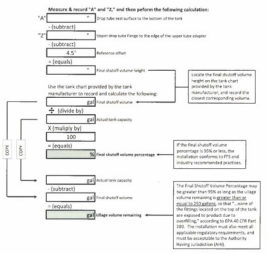
FFS DEFENDER SERIES® FLAPPER VALVES

- Confirm proper activation level as described on page 17 of FFS' "Defender Series® Overfill Prevention Valve Installation Guide"



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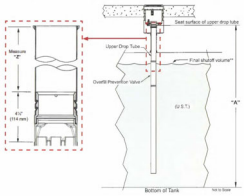
FFS DEFENDER SERIES® FLAPPER VALVES

To calculate Actual Shutoff Level

- A = Distance from drop tube seal surface to tank bottom
- Z = Upper drop tube flange to the edge of the upper tube adapter
- X = Shutoff product height = A – Z – 4.5"
- Y = Tank internal diameter (100% volume height from tank chart)
- Find gallon readings for X & Y (tank chart)
- Shutoff % = X gallons / Y gallons x 100



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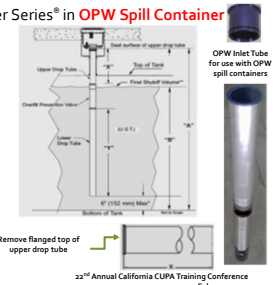
FFS DEFENDER SERIES® FLAPPER VALVES

- Drop Tube Overfill Prevention Device: Defender Series® in **OPW Spill Container**
  - Defender Series® OPV Drop Tube Preparation:
    - Reference Franklin Fueling Systems Defender Series® Overfill Prevention Valve Installation Guide
      - Determine Dimension "A"
        - Measure from bottom of tank to top of OPW face seal adaptor in OPW spill container
      - Determine Dimension "X"
        - Measure required length for the upper drop tube from the non-flanged end
        - Remove the flanged top
    - Follow steps 3 to 16 in OPW 71SO Installation & Maintenance Instructions (H15524PA) referenced in Executive Order VR-102 to cut upper drop tube and install OPW inlet tube



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FFS / EBW FLAPPER VALVES

- Inspector must have current California UST Service Technician certification and manufacturer's training
  - FFS EVR Phase I Systems – VR-101 Certification

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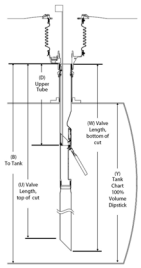
OPW 61SO & 71SO FLAPPER VALVES

- Remove valve from tank
- Inspect for corrosion / other damage
- Visually confirm valve shutoff
- Take measurements
- Use correct tank chart
- Confirm proper activation level by completing page 1 of Appendix B from OPW's "Installation and Maintenance Instructions"



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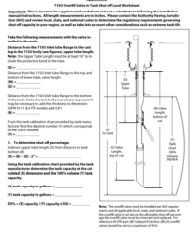
OPW 61SO & 71SO FLAPPER VALVES

- B = Drop tube seal surface to tank bottom
- D = Length of upper tube
- X = Shutoff product height = B – D - 2”
- Y = 100% volume height (from tank chart)
- Find gallon readings for X & Y (tank chart)
- Shutoff % = X gallons / Y gallons x 100



55

OPW 61SO & 71SO FLAPPER VALVES

- With the float in the normal (down) position visually inspect the valve to ensure the poppet is not exposed outside the deflection shield.
- Inspect the float by lifting upward. The float should move freely without any binding.

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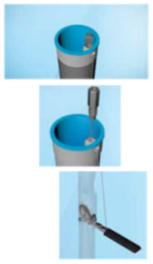
OPW 71SO-T FLAPPER VALVES

- The 71SO-T Overfill Prevention Valve is advertised as being testable without removal from the tank, but that does not satisfy 23 CCR §2637.2 36 month inspection.
- Manufacturer’s procedure can be used for annual test only if done:
  - Loosen test plug.
  - Lift float with cable to simulate fill.
  - Validate proper poppet operation.



57

OPW 61SO & 71SO FLAPPER VALVES

- Inspector must have current California UST Service Technician certification and manufacturer’s training
  - OPW EVR Phase I Certification


OPW Installer Attestation No. P
Eggs Ample
VR-102-UST
Attended Installation Training for EVR Phase I by OPW, Inc.
On:
Exp Date:

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VEEDER-ROOT OVERFILL ALARMS

- Measure product level and confirm accuracy of automatic tank gauge (ATG) reading
- Review “In Tank Setup”
- Compare “Tank Profile” to correct tank chart
- Alarm at or near tank fill?
- Inspect ATG probe
- Visual alarm works?
- Audible alarm works?


Bottom of Float (measure point)


IN-TANK SETUP
T 1:SUPREME
PRODUCT CODE : 1
THERMAL COEFF : .000700
TANK DIAMETER : 91.00
TANK PROFILE : 4 PTS
FULL VOL : 9528
88.3 INCH VOL : 7560
45.5 INCH VOL : 4704
22.8 INCH VOL : 1780
FLOAT SIZE: 4.0 IN.
WATER MINIMUM : 0.000
WATER WARNING : 0.0
HIGH WATER LIMIT : 2.0
WATER WARN FILTER: HIGH
MAX OR LABEL VOLUME : 9528
HIGH PRODUCT % MAX : 95.0
GALLONS : 9052
OVERFILL LIMIT % MAX : 90.0
GALLONS : 8575

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VEEDER-ROOT OVERFILL ALARMS

- Tank Profile Options *(from TLS-3XX Series Consoles System Setup Manual, Appendix B)*
  - 1 Point only for horizontally installed, flat-ended cylindrical tanks (i.e., most steel tanks)
  - 4 Points for tanks with shallow-dished ends (e.g., Owens-Corning)
  - 20 points for tanks with hemispherical ends (e.g., Containment Solutions, Xerxes)

More points means more accuracy


IN-TANK SETUP
T 1:SUPREME
PRODUCT CODE : 1
THERMAL COEFF : .000700
TANK DIAMETER : 91.00
TANK PROFILE : 4 PTS
FULL VOL : 9528
88.3 INCH VOL : 7560
45.5 INCH VOL : 4704
22.8 INCH VOL : 1780

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VEEDER-ROOT OVERFILL ALARMS

- Audible alarm volume and duration are not programmed in the TLS console
- Volume adjustment screw and duration adjustment dial (zero to 60 seconds) are located in the external overfill alarm unit

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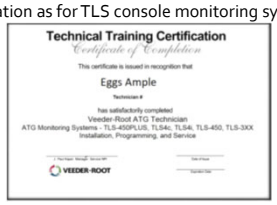
VEEDER-ROOT OVERFILL ALARMS

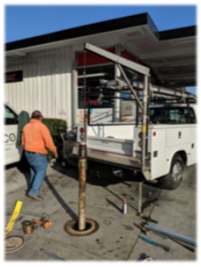
- Inspector must have current California UST Service Technician certification and manufacturer's training
  - Same certification as for TLS console monitoring system certifications


Technical Training Certification
Certificate of Completion
This certificate is issued in recognition that
Eggs Ample
has satisfactorily completed
Veeder-Root ATG Technician
ATG Monitoring Systems - TLS-450PLUS, TLS4c, TLS4, TLS-450, TLS-3XX
Installation, Programming, and Service
VEEDER-ROOT

62

Things Nik Has Seen

- You… are… coming… OUT!!!



63

Things Nik Has Seen

- Who made this?

64

Things Nik Has Seen

- Where's the float?

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Things Nik Has Seen

- Where's the float?

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Things Nik Has Seen

- "Stuck-up" floats



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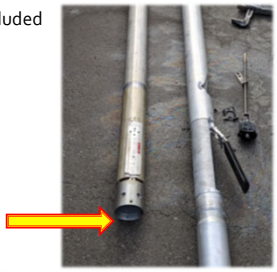
Things Nik Has Seen

- Lower tube not included with purchase?



68

Things Nik Has Seen

- Will the flapper valve work installed upside down? (No, it will not work.)

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Things Nik Has Seen

- Corrosion – how bad it can be….

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Things Nik Has Seen

- Corrosion – how bad it can be….


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Things Nik Has Seen


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Things Nik Has Seen

- Is this the proper 45 degree cut?
- Was this at the bottom of the tank?

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Things Nik Has Seen

- Searching for ball floats

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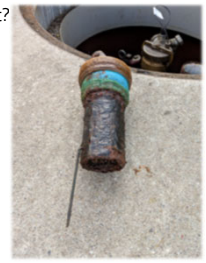
Things Nik Has Seen

- Float, what float?



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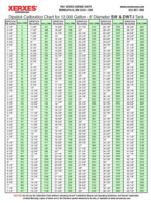
TANK CHARTS

- Very important to use the correct chart



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TANK CHARTS

- Very important to use the correct chart
  - Need to take all measurements to nearest 1/8"
  - If a calculated level falls between two entries on the chart, always use the smaller gallon amount/height
  - Tank deflection will cause measured diameters to differ from tank chart values
  - For compartmented fiberglass tanks, you must use the proper charts for Base Tanks and End Tanks
  - Calibration charts for many tanks made by Owens-Corning, Joor, Trusco, and other out-of-business manufacturers are available at www.Unidocs.org.

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TANK CHARTS

- 100% Capacity = Last entry on chart
  - Example: 100% = 11,682 gallons = 91.125" product height

90-7/8"	11681
91"	11682
91-1/8"	11682

x812SD1.2 - 07/05fbf

1/8 = 0.125
1/4 = 0.25
3/8 = 0.375
1/2 = 0.50
5/8 = 0.625
3/4 = 0.75
7/8 = 0.875

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TANK CHARTS

- 95% Capacity = Last entry on chart x 0.95
  - Example: 95% = 11,682 x 0.95 ≈ 11,098 gallons ≈ 81.625" product height

81-1/2"	11079
81-5/8"	11091
81-3/4"	11103
81-7/8"	11114

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TANK CHARTS

- 90% Capacity = Last entry on chart x 0.90
  - Example: 90% = 11,682 x 0.90 ≈ 10,514 gallons ≈ 76.125" product height

DIPSTICK READING	GALLONS
76-1/8"	10501
76-1/4"	10516
76-3/8"	10531

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COMPARING TANK CHARTS

Model	Containment Solutions 12,000 gallon 8' Diameter DWT6 Tank	Modern Welding 12,000 gallon 8'0" x 32'0"	Owens-Corning 12,000 gallon 8' G5, G6, DWT-2(8) & DWT-3(8)	Xerxes 12,000 gallon 8' Diameter DW Tank manufactured after 8/31/2008
100% Diameter	91.625	95.750	92.000	90.500
100% Capacity	11,595	12,032	11,627	11,608
95% Volume	11,015.25	11,430.75	11,045.65	11,027.60
Product Height @ 95%	82.375	86.375	82.625	81.375
90% Volume	10,435.50	10,829.13	10,464.30	10,447.20
Product Height @ 90%	76.875	80.625	77.000	75.875

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COMPARING TANK CHARTS

Model	Xerxes 8,000 gallon 8' Diameter DW Tank manufactured after 8/31/2008	Xerxes 8,000 gallon 8' Diameter DW End Tank manufactured after 8/31/2008	Xerxes 8,000 gallon 8' Diameter DWT-II Tank manufactured before 9/1/2008	Xerxes 8,000 gallon 8' Diameter DWT-II End Tank manufactured before 9/1/2008	Xerxes 8,000 gallon 8' Diameter Model SW & DWT-I Tanks
100% Diameter	90.500	90.500	89.750	90.250	91.125
100% Capacity	7,899	8,001	7,841	7,917	7,950
95% Volume	7,504.05	7,600.95	7,448.95	7,521.15	7,552.50
Product Height @ 95%	81.125	81.750	80.250	81.375	81.375
90% Volume	7,109.10	7,200.90	7,056.90	7,125.30	7,155.00
Product Height @ 90%	75.625	76.375	74.750	76.000	75.875

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TANK CHARTS – Xerxes

www.zcl.com/en/document-library/

- Fiberglass tanks
- Xerxes has different charts for tanks manufactured before 9/1/2008 and tanks manufactured after 8/31/2008
- Older double-wall tank (Model DWT-I) data is on same charts as Single Wall Tanks
- Xerxes charts cannot be used for tanks made by other manufacturers (e.g., Owens-Corning or Containment Solutions)

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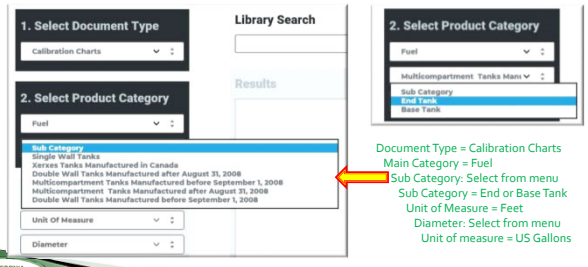
TANK CHARTS – Xerxes

www.zcl.com/en/document-library/



Document Type = Calibration Charts
Main Category = Fuel
Sub Category: Select from menu
Sub Category = End or Base Tank
Unit of Measure = Feet
Diameter: Select from menu
Unit of measure = US Gallons

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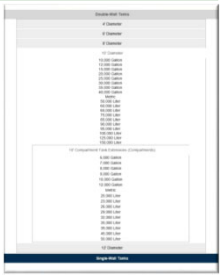
TANK CHARTS – Containment Solutions, Inc.

http://containmentsolutions.com/fiberglass-calibration-charts.html

- Fiberglass tanks

DW Tanks or SW Tanks
Diameter
Volume



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TANK CHARTS – Containment Solutions, Inc.

http://containmentsolutions.com/fiberglass-calibration-charts.html

- Many Owens-Corning charts are available on the Unidocs website. If an O-C tank chart cannot be found, Containment Solutions charts are the best substitute, but not an exact match *(CSI tanks have hemispherical ends, O-C tank ends are less rounded)*

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TANK CHARTS – Modern Welding

www.modweldco.com/resources/tank-chart-generator

- Steel tanks

Website generates calibration charts based on tank dimensions

Charts are sent by email

Note: Guesstimates for gallon capacity and tank length lead to garbage in, garbage out data, so it is always better to use original tank charts if possible

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INSPECTION RECORDS

- Overfill Prevention Equipment Inspection Report Form
- Attachments (Per 23 CCR Appendix IX, "Attach… all documentation required to determine the results.")
  - Tank chart(s)
  - Measurements
  - Calculations
  - In-Tank Setup *[if using automatic tank gauge (ATG) to trigger alarms per 23 CCR §2635(c)(1)(A) or (B)]*

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ALLOWED OVERFILL PREVENTION METHODS

Tank Install Date	Option A: OK?	Option A2 OK?	Option B OK?	Option C OK?	Option D OK?
7/1/2003 - Present	➢ Yes if BF installed prior to 10/1/2018 ➢ No if BF installed on or after 10/1/2018	➢ Yes	➢ Yes if BF installed prior to 10/1/2018 ➢ No if BF installed on or after 10/1/2018	➢ Yes	➢ Yes
7/1/1987 – 6/30/2003	➢ Yes if UST has monitored fill sump and DW U/G Vent Line and BF installed prior to 10/1/2018 ➢ No if direct bury spill bucket ➢ No if unmonitored fill sump ➢ No if SW or unmonitored U/G Vent Line ➢ No if BF installed on or after 10/1/2018	➢ Yes if UST has monitored fill sump and DW U/G Vent Line ➢ No if direct bury spill bucket ➢ No if unmonitored fill sump ➢ No if SW or unmonitored U/G Vent Line	➢ Yes if BF installed prior to 10/1/2018 ➢ No if BF installed on or after 10/1/2018	➢ Yes	➢ Yes if UST has monitored fill sump and DW U/G Vent Line ➢ No if direct bury spill bucket ➢ No if unmonitored fill sump ➢ No if SW or unmonitored U/G Vent Line
On or before 7/1/1987	➢ Yes if BF installed prior to 10/1/2018 ➢ No if BF installed on or after 10/1/2018	➢ Yes	➢ Yes if BF installed prior to 10/1/2018 ➢ No if BF installed on or after 10/1/2018	➢ Yes	➢ Yes

BF = Ball float, DW = Double-wall, SW = Single-wall; U/G = Underground

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VIOLATIONS

- Unified Program Violation Type 2030036 Overfill Prevention
  - Failure of…
    - …equipment to function [23 CCR §2635(c)(1)]
    - …equipment to activate at correct level [23 CCR §2635(c)(1)]
  - Failure to…
    - …meet exemption criteria [23 CCR §2635(c)(2)]
    - …install overfill prevention equipment [23 CCR §2635(c)(1) or 2665(a)]
    - …inspect by 10/13/2018 and every 36 months [23 CCR §2637.2(a)]
    - …inspect within 30 days of installation or repair [23 CCR §2637.2(a)]
    - …properly inspect [23 CCR §2637.2(b)]
    - …have qualified technician perform the inspection [23 CCR §2637.2(c)]
    - …maintain inspection records for 36 months [23 CCR §2712(b)(1)(G)]
  - Ball float for OP installed after 10/1/2018 [23 CCR §2635(d) & 2665(c)]

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VIOLATIONS

- UP Violation Type 2010018 Overfill Prevention Inspection – Records
  - Failure to…
    - …document inspection on Overfill Prevention Equipment Inspection Report Form [23 CCR §2637.2(d)]
    - …include attachments with Overfill Prevention Equipment Inspection Report Form [23 CCR §2637.2(d) & Appendix IX]
    - …submit OPEIR Form and attachments to the UPA within 30 days of inspection [23 CCR §2637.2(e)]

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VIOLATIONS

- UP Violation Type 2030047 Secondary Containment
  - Providing overfill prevention per 23 CCR §2635(c)(1)(A) or (D) for a UST installed between 7/2/1987 and 6/30/2003 that has a direct-buried fill riser or single-wall underground vent line

[Note: Violation is due to failure to qualify for exemption of the riser and vent piping from secondary containment per 23 CCR §2636(a)(1), not a failure to provide overfill prevention.]

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GOT QUESTIONS?

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Overfill Prevention Equipment

Images obtained from, but not limited to:

- California Environmental Reporting System (CERS)
- Emco-Wheaton Retail Corp.
- Franklin Fueling Systems
- Morrison Bros. Co.
- OPW
- Petroleum Equipment Institute (PEI)
- US EPA
- Veeder-Root

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