Functionality Inspections of Flapper Valve Overfill Prevention Devices

Can We Get This Right (or at Least Close Enough)?

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When I was a Youth – Many, Many Years Ago

- Had my picture taken with Festus at the Dixie National Rodeo in 1972 (Gunsmoke was big!)

- I know some of you wonder if I have always been the way I am

- I will reveal (later) what I looked like in 1972 and let you judge for yourself

Flapper Valve (aka “OPV”) Inspection

Despite many webinars, presentations, guidance documents, instructions and recommended practices nothing has been more confusing (and thus screwed-up)

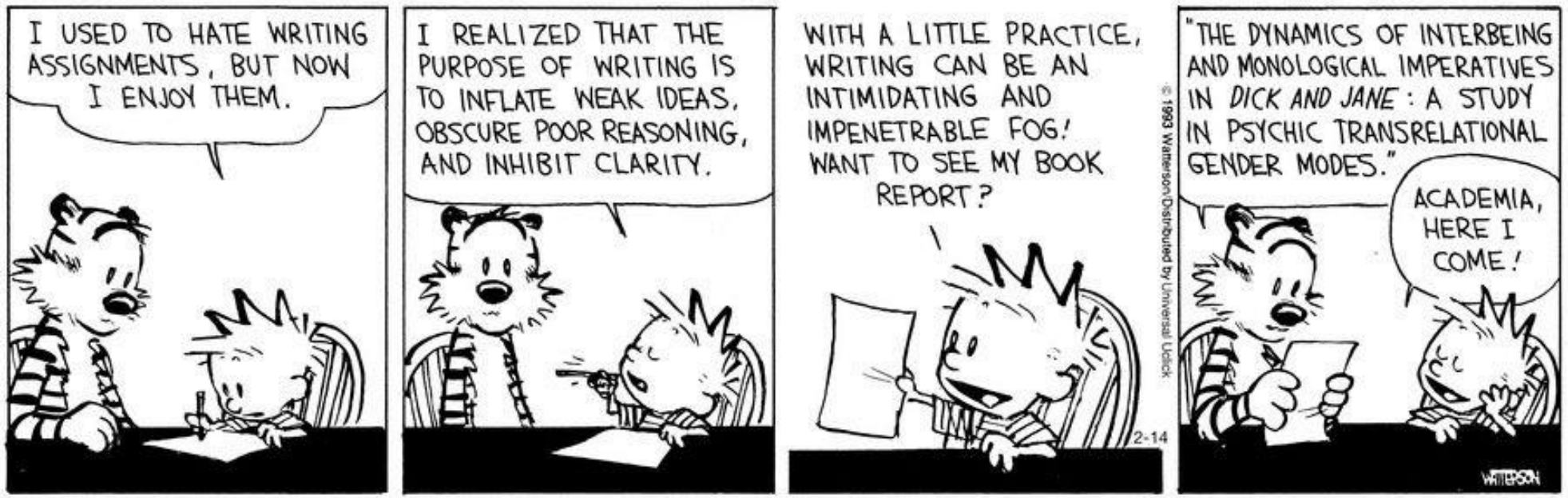
Although a relatively new requirement for some states, overfill prevention inspections have been required in Mississippi since 2008

Many others have since spoken on this subject since my first presentation at the UST/LUST Conference in 2010

Despite repeated efforts – We still can’t seem to get this right

Flapper Valve (aka “OPV”) Inspection

The goal of this presentation is to cut through the seemingly impenetrable fog that surrounds the correct measurement of OPVs



This presentation will focus exclusively on “flapper valves”

Flapper Valve (aka “OPV”) Inspection

A Simplified Procedure is Proposed

- Easy to understand (even for a backwoods Mississippi redneck)
- Only considers shutoff at 95% tank capacity (none of this “do not wet the tank top” BS)
- OPV must be removed from the tank

Flapper Valve (aka “OPV”) Inspection

Proposed Simplified Procedure

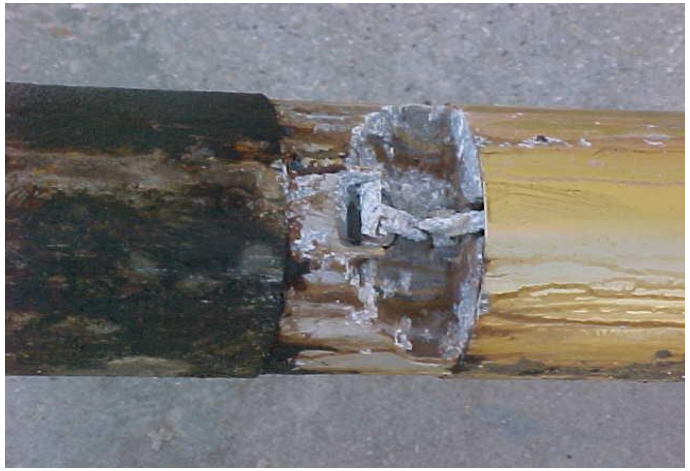
- Not intended to be a precise measurement
  - Close enough for government work?

- If OPV is marginal - should follow manufacturers instructions to make final determination of pass/fail

Flapper Valve (aka “OPV”) Inspection

Why Should OPV Removal be Required?

“I See Nothing”



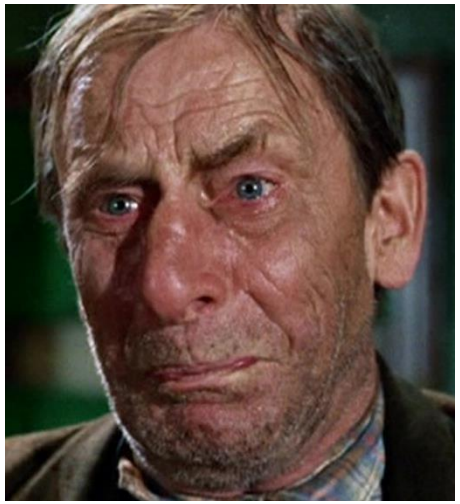
Speaking of the Alternative Rule BS

- Many states adopted 40 CFR 280 after it was promulgated but before 1991 overfill prevention amendment

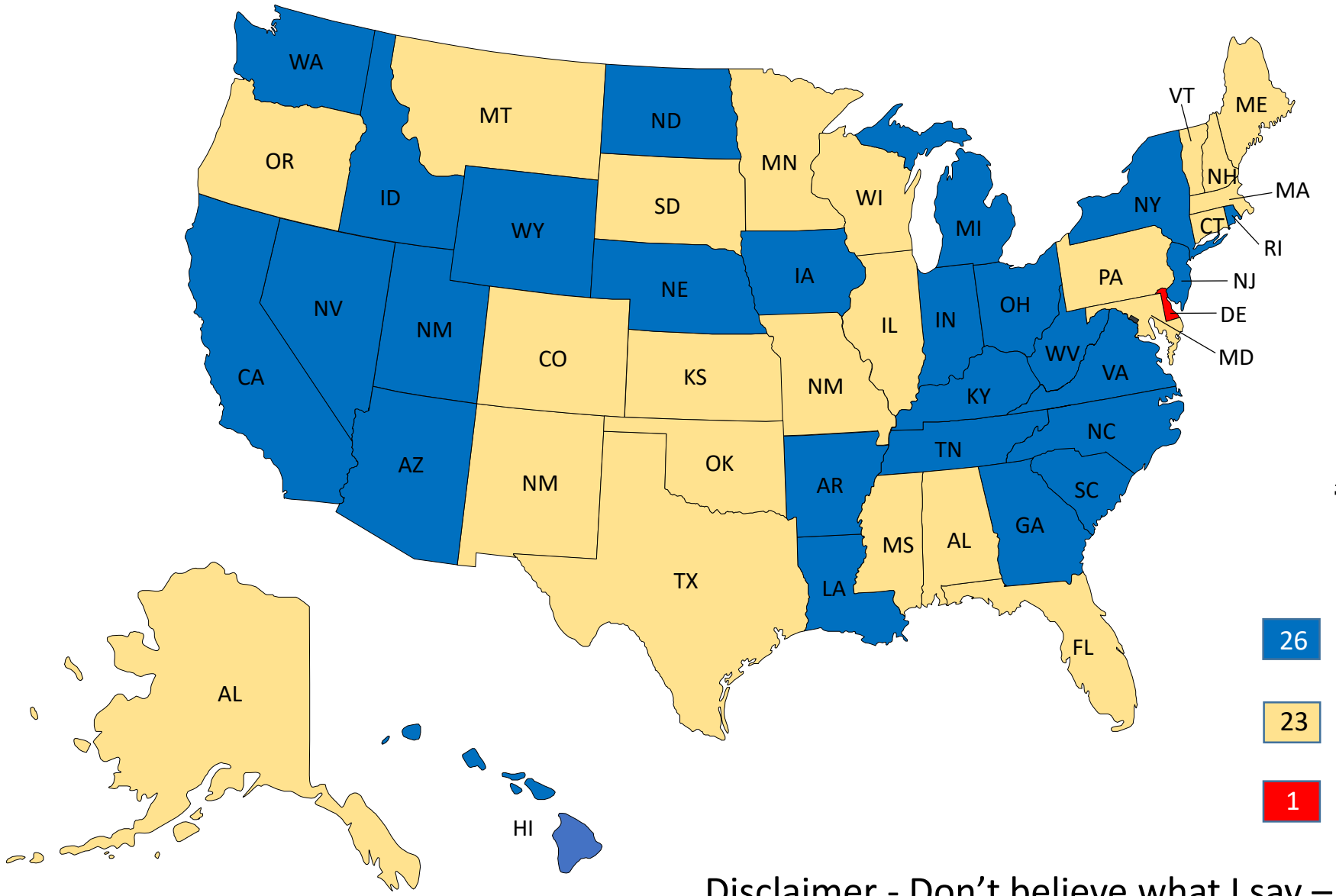
- Thus not every state has the 1991 overfill prevention alternatives in their rule

Does your state have the 1991 alternative rule?

ARE YOU SURE?



Overfill Prevention Rule



Alternative Overfill Prevention Rule

26	Have Alternate Rule
23	Do Not Have Alternate Rule
1	95% Initial & 98% Complete Shutoff

Disclaimer - Don’t believe what I say – Look it up yourself

Overfill Prevention Inspection

The Federal rule requires the overfill prevention device to be inspected triennially for proper installation and functionality

Inspection must be performed in accordance with one of the following:

1. Manufacturer's instructions
2. Code of Practice (PEI RP1200)
3. Determined by implementing AHJ to be no less protective

(Adopt proposed simplified procedure?)

Overfill Prevention Inspection – Drop Tube Device a.k.a. Overfill Prevention Valve (OPV)

EBW Auto Limiter II (708)	Emco Wheaton Guardian A1100	OPW 61SO / 71SO	Franklin Fueling Defender	Universal Valve Model 39
				

Overfill Prevention Inspection - Drop Tube Device (OPV)

What Kind of Overfill Prevention Is This?

Overfill Prevention Inspection – Drop Tube Device (OPV)

Is the OPV set to shut-off @ 95%?

If I know only one thing about the OPV then it is very easy to figure out the rest

THE ONE THING

Where is the fluid level relative to the OPV when complete (2nd Stage) shut-off occurs?

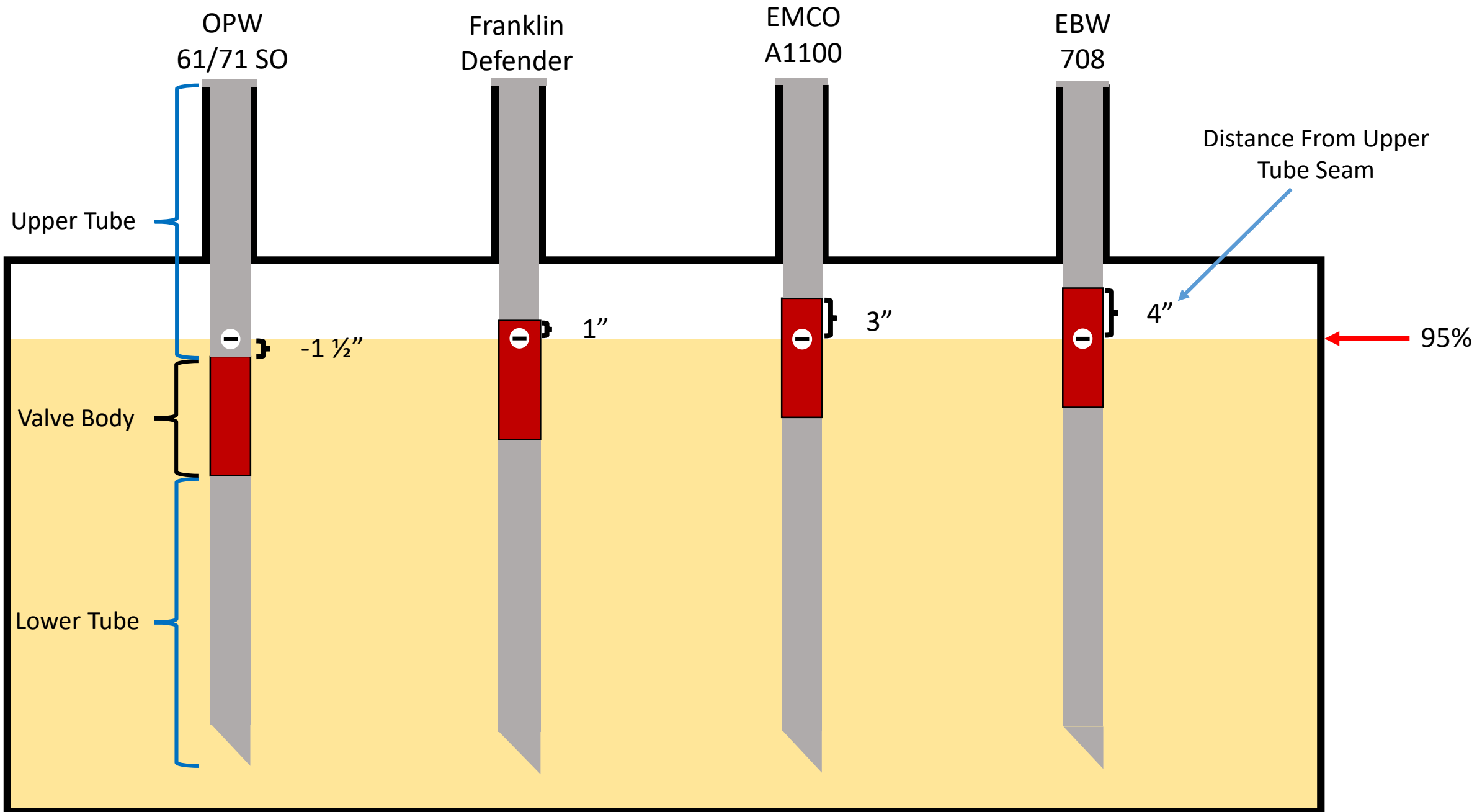
THE ONE THING

a.k.a.

"95 % Mark"

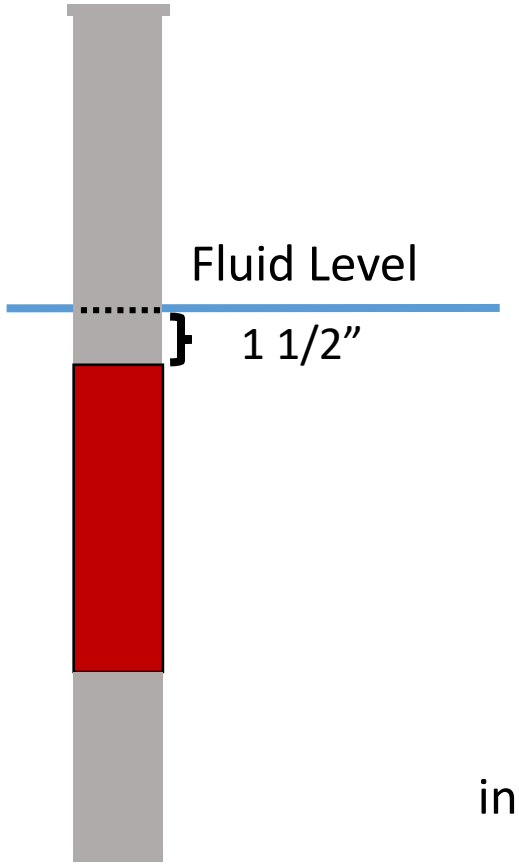
When the fluid level reaches this point, the bypass valve closes and complete (2nd stage) shutoff occurs

Fluid level relative to OPV when complete shutoff occurs (“95% Mark”)



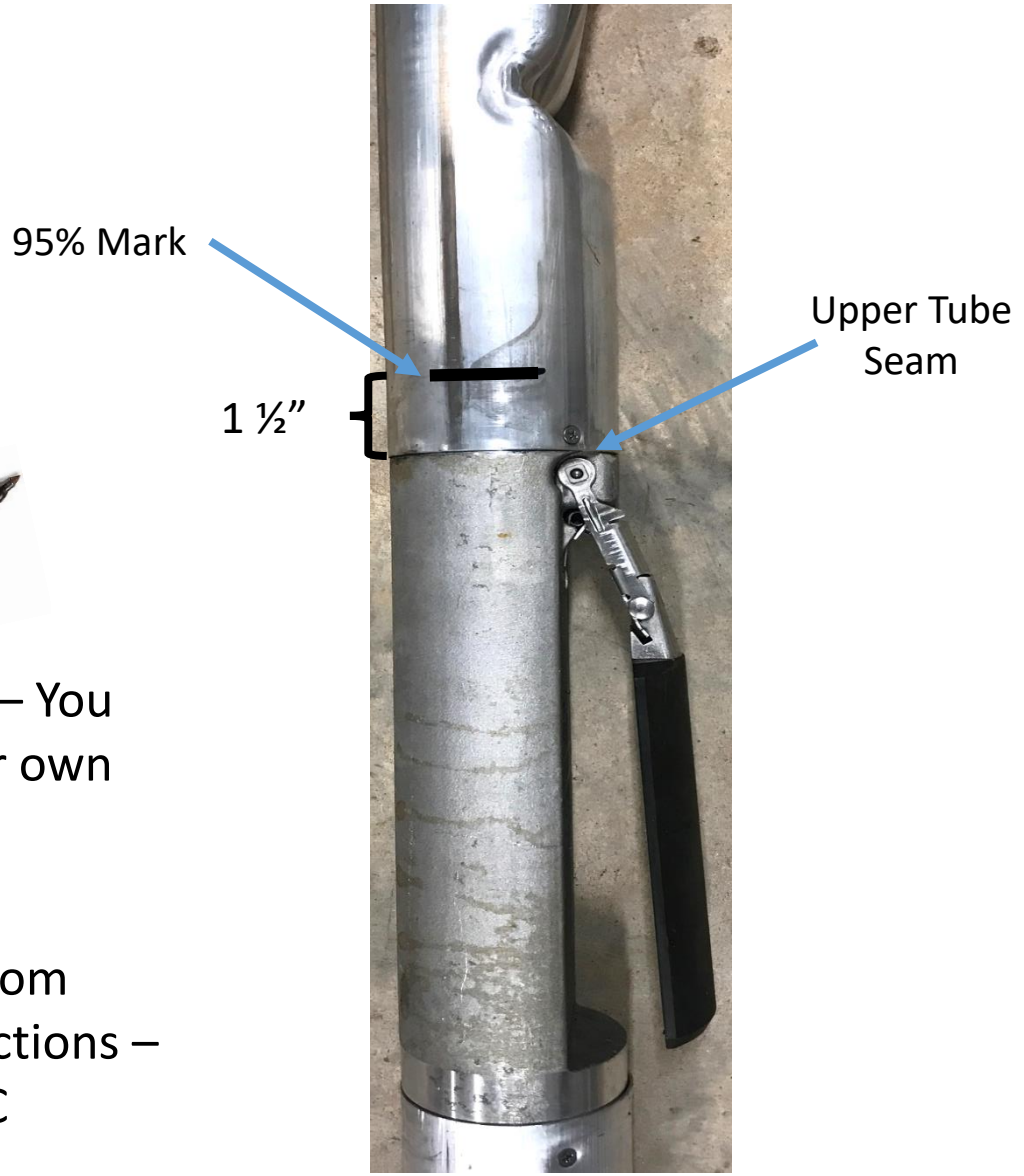
Fluid level relative to OPV when complete shutoff occurs (“95% Mark”)

OPW 61SO & 71SO



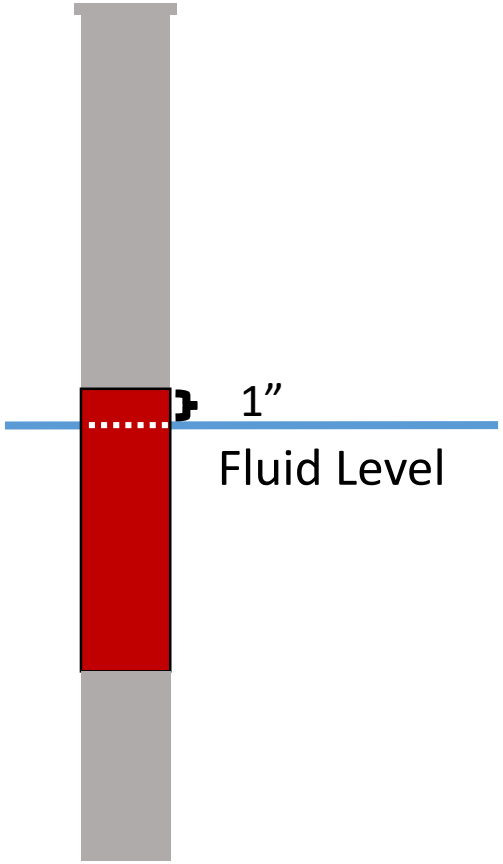
All OPW Valves – You must make your own 95% Mark

1 ½” comes from installation instructions – Appendix C



Fluid level relative to OPV when complete shutoff occurs (“95% Mark”)

Franklin Fueling Defender



Upper Tube Seam

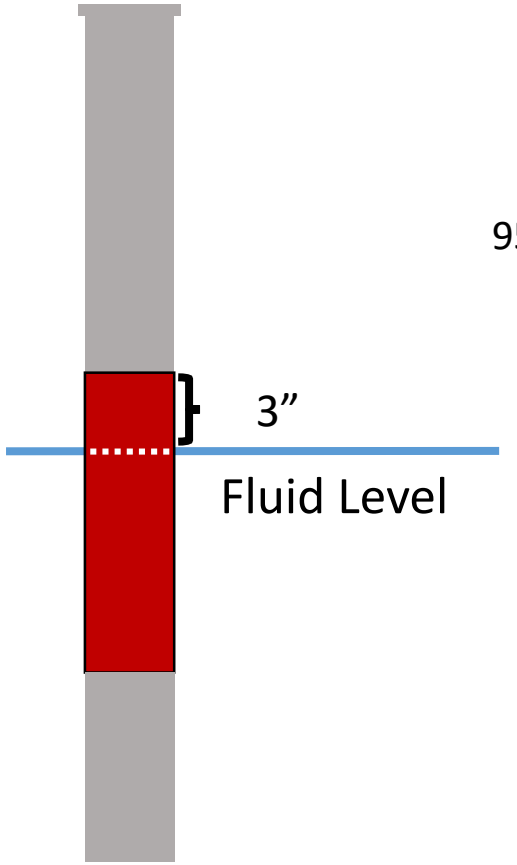
95% Mark

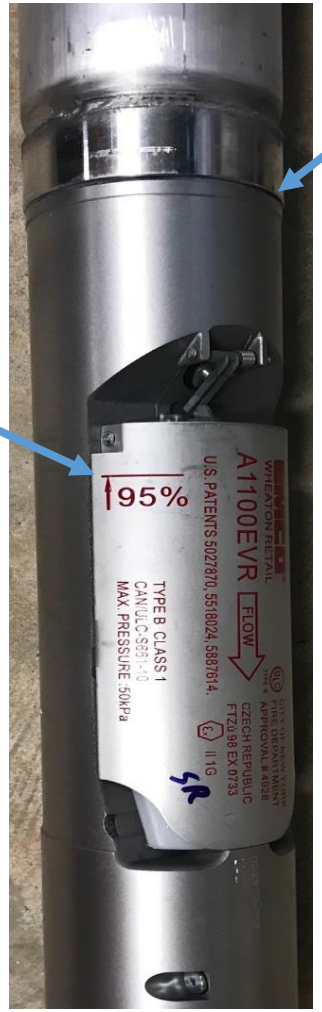
1”

All Defender models have 95% mark (upper edge of “sleeve”)

Fluid level relative to OPV when complete shutoff occurs (“95% Mark”)

Emco Wheaton A1100

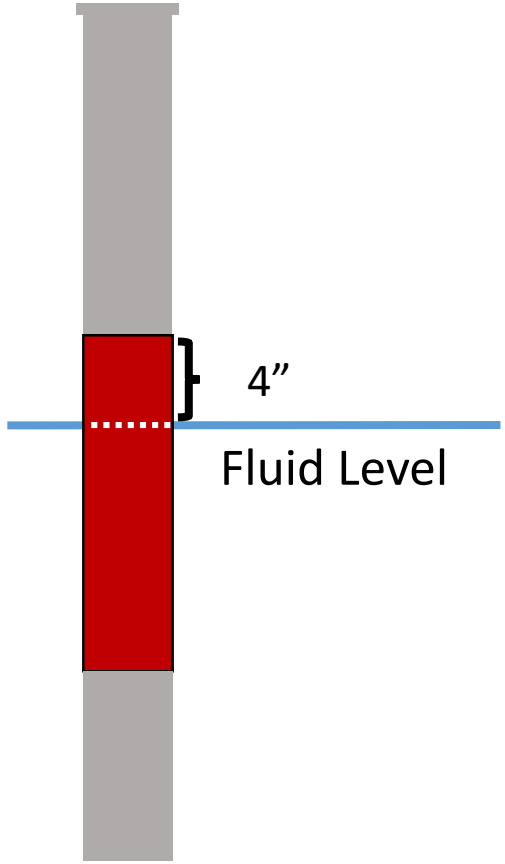




Earlier Models w/ No Mark - Make your own mark

Fluid level relative to OPV when complete shutoff occurs (“95% Mark”)

EBW 708/ Auto Limiter II



95% Mark
(machined groove)

Upper Tube Seam

Early Models w/ No Groove - Make your own mark

Overfill Prevention Inspection – Drop Tube Device (OPV)

If I Know Where the 95% Mark is on the OPV then

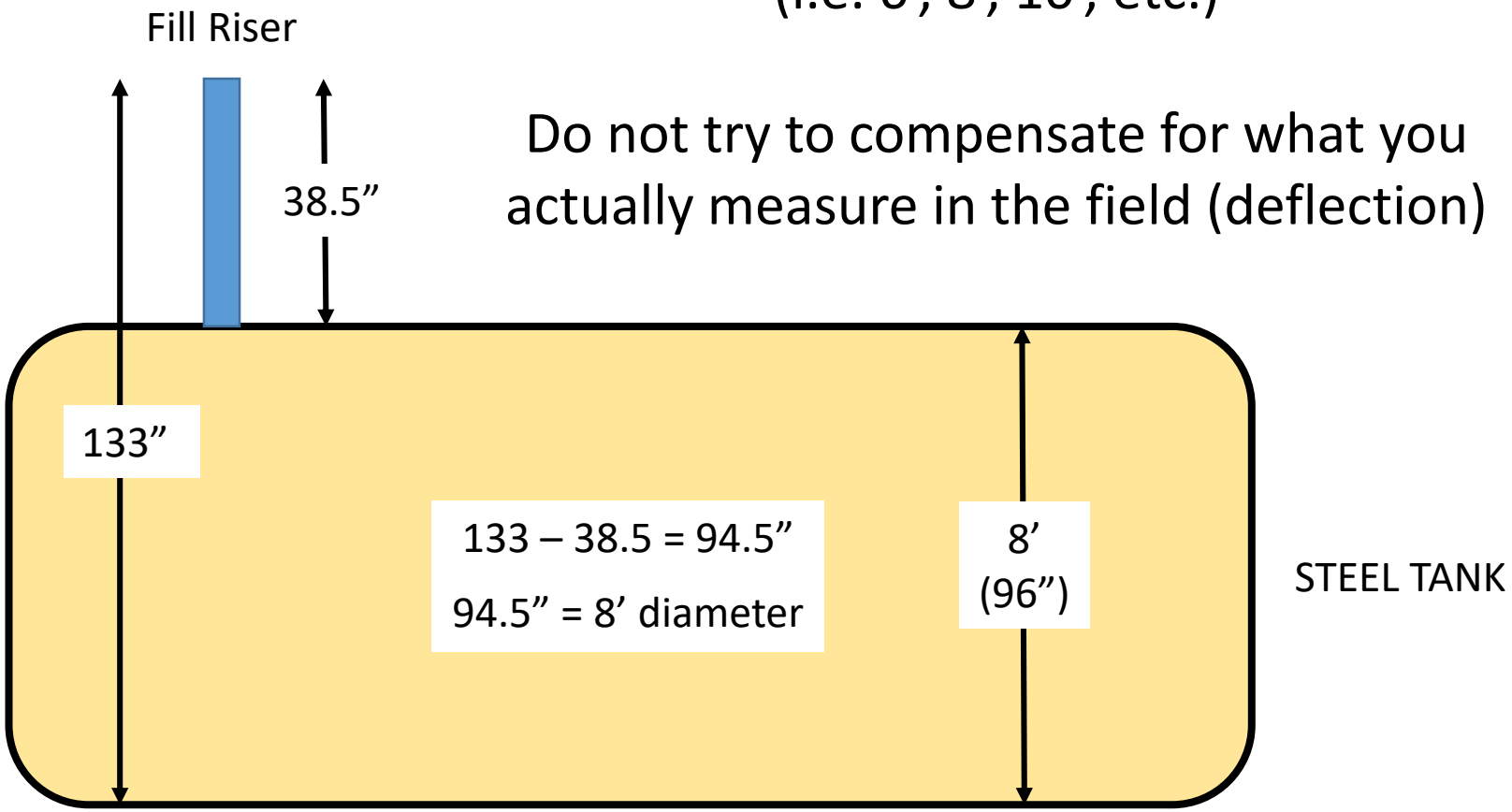
Let's Figure Out the Rest

1. What is the tank diameter?
2. How many inches below the top of the tank = "95%" capacity?
3. What is the height (length) of the tank fill riser?
4. Is the OPV set to shutoff at 95%?

#1 – What is the Tank Diameter?

When determining tank diameter – go with the NOMINAL value to the nearest foot (i.e. 6’, 8’, 10’, etc.)

Do not try to compensate for what you actually measure in the field (deflection)



10,000 GALLON HORIZONTAL TANK
96” X 27’

INCHES DEPTH	GALLONS
80.5	9090
81.0	9139
81.5	9188
82.0	9236
82.5	9283
83.0	9329
83.5	9375
84.0	9420
84.5	9464
85.0	9507
85.5	9550
86.0	9591
86.5	9632
87.0	9672
87.5	9711
88.0	9748
88.5	9785
89.0	9821
89.5	9855
90.0	9888
90.5	9920
91.0	9951
91.5	9980
92.0	10008
92.5	10034
93.0	10058
93.5	10080
94.0	10101
94.5	10119
95.0	10134
95.5	10146
96.0	10152

#2 - How many inches below the top of the tank = “95%”?

Although 9.5” actually represents 5% of tank capacity (ullage) everybody calls this “95%”

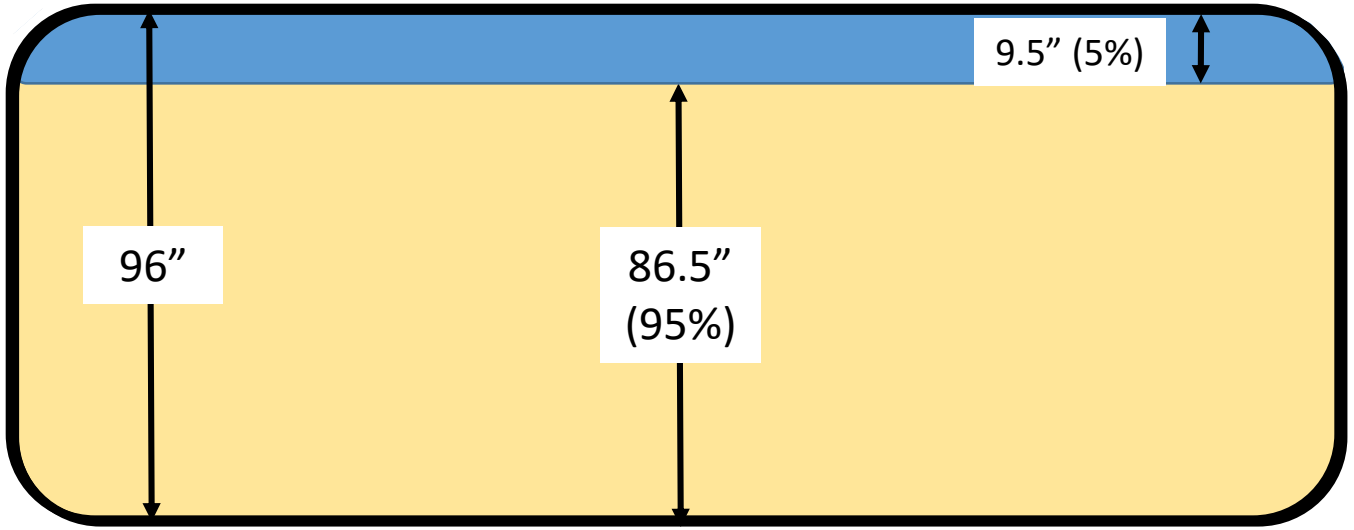
96” = 10,152 gallons

10,152 x 0.95 = 9644 gallons

9644 gallons = 86.5” (from chart)

96” – 86.5” = 9.5”

9.5” = “95%”



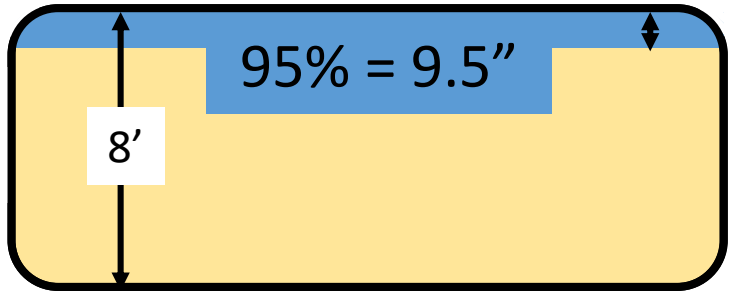
STEEL TANK

10,000 GALLON HORIZONTAL TANK
96” X 27’

INCHES DEPTH	GALLONS
80.5	9090
81.0	9139
81.5	9188
82.0	9236
82.5	9283
83.0	9329
83.5	9375
84.0	9420
84.5	9464
85.0	9507
85.5	9550
86.0	9591
86.5	9632
87.0	9672
87.5	9711
88.0	9748
88.5	9785
89.0	9821
89.5	9855
90.0	9888
90.5	9920
91.0	9951
91.5	9980
92.0	10008
92.5	10034
93.0	10058
93.5	10080
94.0	10101
94.5	10119
95.0	10134
95.5	10146
96.0	10152

#2 - How many inches below the top of the tank = “95%”?

4000 Gallons

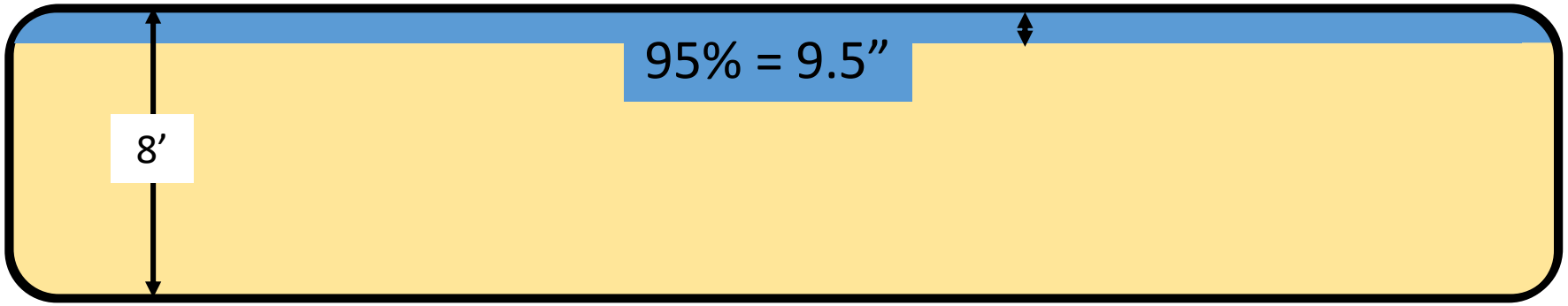


If the tank diameter is the same then “95%” is the same

(volume does not matter)

STEEL TANKS

12,000 Gallons

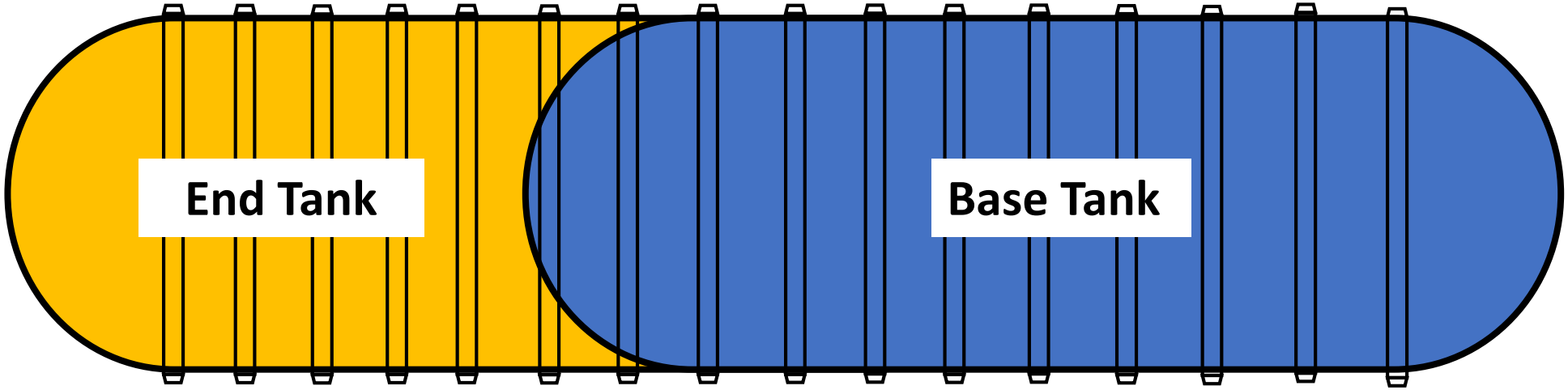


#2 - How many inches below the top of the tank = “95%”?

8’ Diameter FRP Multi-Compartment Tank

End Tank
95% = 8.75”

Base Tank
95% = 9.25”



Yes – I am aware that FRP tanks are different

#2 - How many inches below the top of the tank = “95%”?

Tank Material of Construction	Single-Wall / Double-Wall	Tank Diameter (Tank Chart)	Date of Manufacture	Single Comp. or Base/End (multi-comp.)	“95%” (5% Ullage)
Steel (sti-P3, ACT-100, Composite)	Single-Wall Double-Wall	96”	All	Single Compartment or Base/End Tank	9 1/2”
Owens Corning	All	92”	All	All	9 3/8”
FRP (CSI)	Single-Wall Double-Wall	91 5/8	All	Single compartment or Base Tank	9 3/8”
	Single-Wall Double-Wall	91 5/8	All	End Tank	9”
FRP (Xerxes)	Single-Wall	91 1/8”	All	Single Compartment or Base Tank	9 3/8”
	Double-Wall	89 3/4	Before 9-1-2008	Single Compartment or Base Tank	9 3/8”
	Double-Wall	90 1/2	On or after 9-1-2008	Single Compartment or Base Tank	9 1/4”
	Multi-Compartment	90 1/4	Before 9-1-2008	End Tank	8 7/8”
	Multi-Compartment	90 1/2	On or after 9-1-2008	End Tank	8 3/4”

9 ½”

#2 - How many inches below the top of the tank = “95%”?

Simplified Procedure

If the tank diameter is the same then “95%” can be effectively approximated regardless of tank type/model/manufacture date

Nominal Tank Diameter	Distance Below Top of Tank = “95%” (5% Ullage)
6’	7”
8’	9 ½”
10’	12”
12’	14”

Table can be expanded for less common tank diameters

#2 - How many inches below the top of the tank = “95%”?

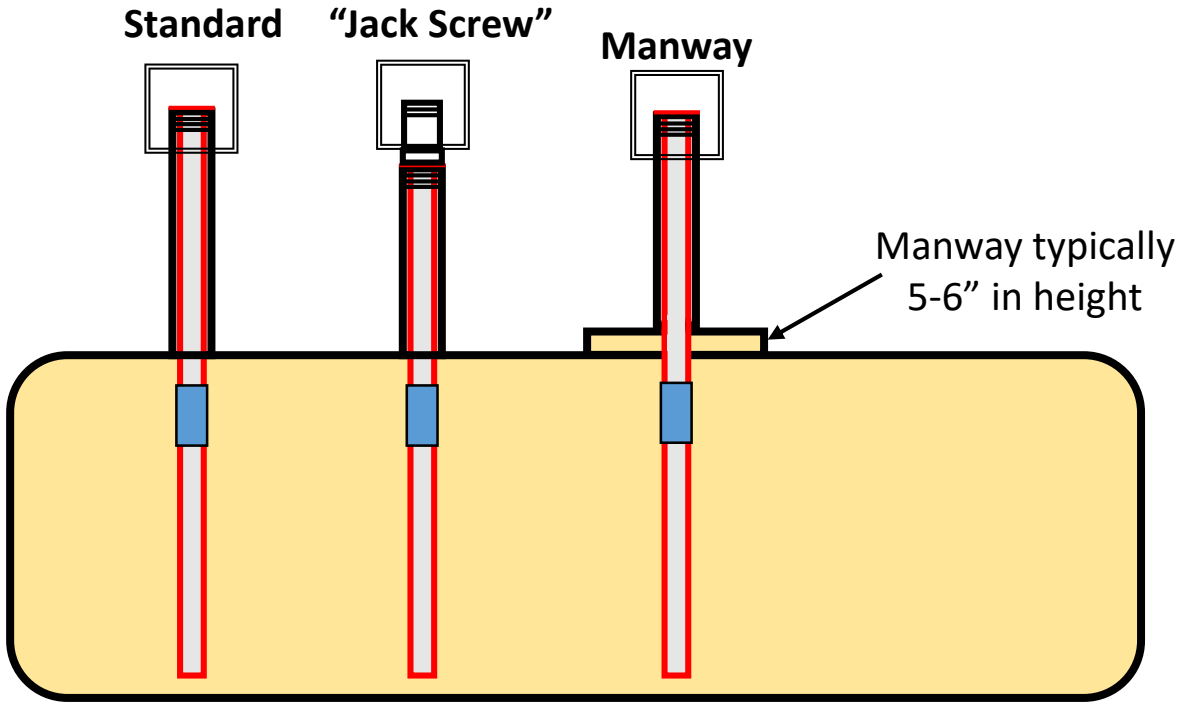
Simplified Procedure

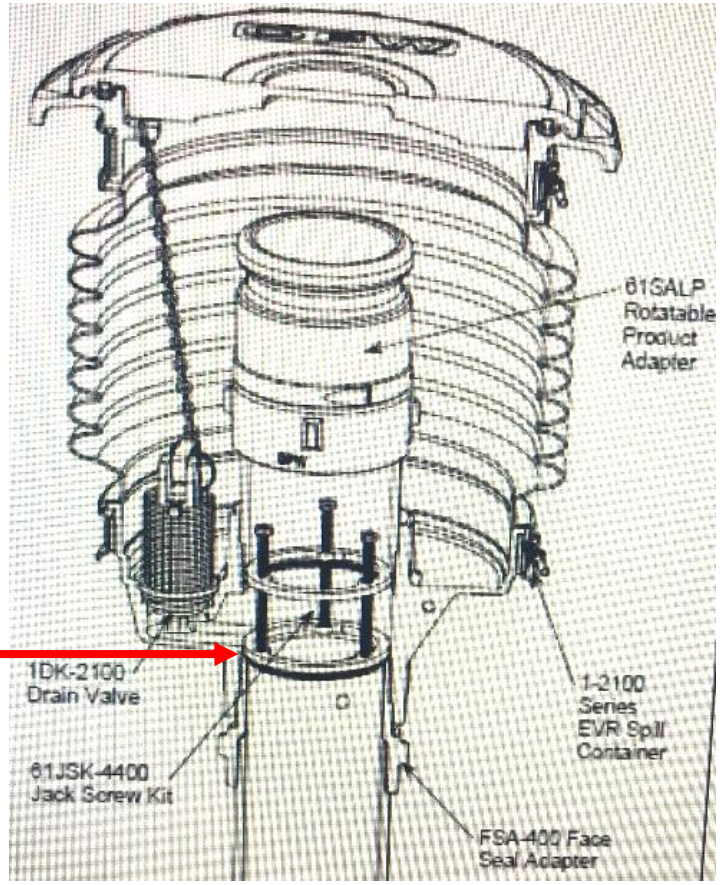
In addition to relatively small variation in 95% from tank type to tank type - It’s common for two (or three) people to get slightly different numbers when measuring the riser height (+/- ¼”)

What’s the Point?

#3 - Height of Riser

More correctly, height of riser from top of tank to seating surface of OPV



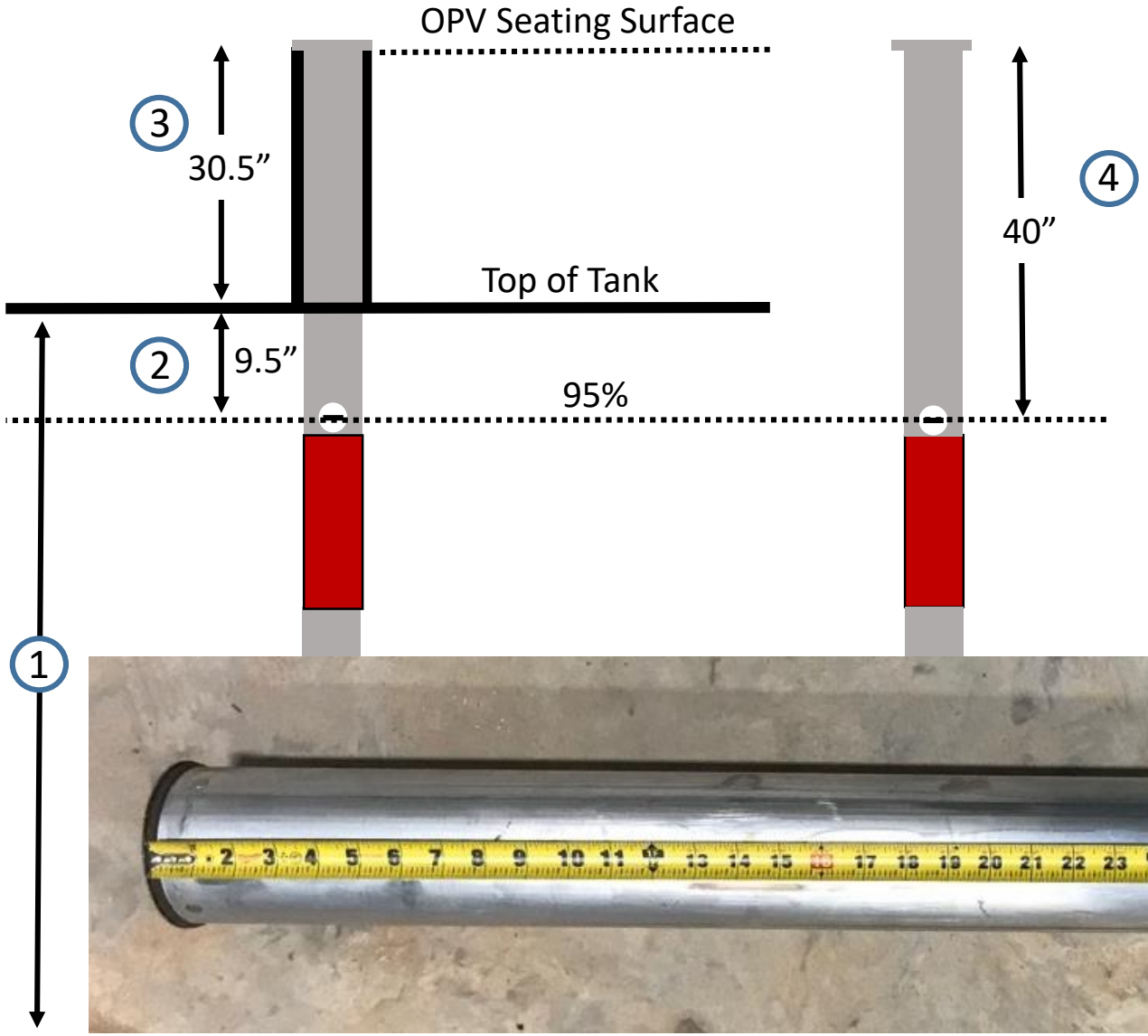


"Jack Screw"

Three Basic Scenarios

1. Standard - Drop tube is under fill adapter
2. "Jack Screw" - Drop tube is under pipe nipple/assembly
3. Manway – Height of manway must be added to riser height

#4 - Is the OPV Set to Shutoff @ 95% Tank Capacity ?



1. Tank Diameter = 8’
2. 95% = 9.5”
3. Riser = 30.5”
4. Calculated Length to 95% Mark = 40”
5. Measured Length to 95% Mark = 40”

Overfill Prevention Inspection – Manufacturer's Procedures

Should always refer to manufacturer's instructions/procedures if there is any question about PASS/FAIL status when using Simplified Procedure

TECH UPDATE

FFSPRO UNIVERSITY

UST OVERFILL EQUIPMENT INSPECTION - DEFENDER SERIES® OVERFILL PREVENTION VALVE

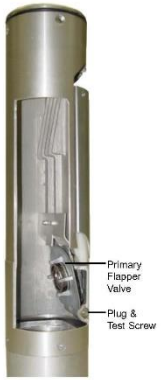
Facility Name:			Owner:			
Address:						
City, State, Zip Code:					Phone	
Testing Company			Phone:		Date:	
Product Grade:						
1. REFER TO THE MANUFACTURER'S TANK CHART.						
Tank Volume (gal)						
Tank Diameter (in)						
95% Tank Volume (gal) (x Multiply Tank Volume by 0.95)						
95% Volume Height (in inches) Based on Calculation Above	1	1	1	1	1	1
2. PERFORM THE OVERFILL PREVENTION VALVE INSPECTION.						
Inspection performed? Flapper moves freely into the flow path?	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐
Measure "A" (in)						
- Subtract "Z" (in)						
- Subtract 4.5 in	- 4.5	- 4.5	- 4.5	- 4.5	- 4.5	- 4.5
= Calculated 95% Final Shutoff Volume Height (in inches) Based on Measurements Above	2	2	2	2	2	2
Difference Between 1 and 2 (equal or less than = pass, greather than = fail)						
3. DETERMINE WHETHER THE OVERFILL PREVENTION VALVE INSTALLATION PASSES THE INSPECTION.						
Find the Final Shutoff Volume in the manufacturer's tank chart. Enter the closest corresponding volume (gal).						
÷ Divide by Actual Tank Capacity (gal)						
x Multiply by 100						
= Equals Final Shutoff Volume %						
If the final shutoff volume percentage is 95% or less, the installation meets PEI and industry recommended practices. This percentage can, however, exceed 95% as long as the ullage volume remaining is greater than or equal to 250 gallons so that "none of the fittings located on the top of the tank are exposed to product due to overfilling" according to *EPA 40 CFR, Part 280*. The installation must also meet all applicable regulatory requirements, and must be acceptable to the Authority Having Jurisdiction.						
Enter Actual Tank Capacity (gal)						
- Subtract Final Shutoff Volume (gal)						
= Equals Ullage Volume Remaining (gal)						
The OPV passes the installation inspection?	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐
Comments:						

Tester's Name (print) _____ Tester's Signature _____

EMCO WHEATON RETAIL

A1100 On Site Upright Functional Test Procedure

Required Tools:
- A0081 Adapter Wrench
- 1/8" Allen Wrench
- 9/64" Allen Wrench
- Standard Screwdriver



Step 1: Using the Emco Wheaton A0081 Adapter Wrench, remove the cap and adapter. Raise valve assembly out of tank as shown. Use an assistant to hold the valve in position during the test.

Step 2: Using a 1/8" allen wrench, remove the plug from the valve.

Step 3: Place a 9/64" allen wrench into the plug socket and attempt to turn the wrench counterclockwise. If the wrench turns 5 degrees or less, the primary flapper valve is in the locked (open) position.

Step 4: Use a screwdriver to raise the bottom float. Turn the allen wrench 90 degrees counterclockwise placing the primary flapper valve in the closed position.

While the flapper is in the closed position, move the float up and release. It should rise and fall smoothly. Do this 3-4 times to insure proper operation.

Step 5: Remove the screwdriver to release the float. Rotate the allen wrench to the original position. You should hear and/or feel the flapper valve relatch back to the open position. Retest following Step 4.

Step 6: Re-insert the allen wrench. Attempt to turn the 9/64" allen wrench counterclockwise to check if the flapper is in the locked position. If the primary flapper valve is locked, the valve is in proper working order.

Step 7: Re-insert the plug securely into the valve, using the 1/8" allen wrench.

Emco Wheaton Retail Corp.
2300 Industrial Park Dr. • Wilson, NC 27893 • 262-243-0150 • 262-243-4759 (fax) • www.emcoretail.com

IP-204
Rev B 11/18

Appendix C (continued)

71SO Overfill Valve in Tank Complete Shut Off Level Worksheet

Important: This is meant to be supplemental worksheet and not a substitute to following the installation manual instructions. All length measurements are in inches. Please contact the Authority Having Jurisdiction (AHJ) and review local, state, and national codes to determine the regulatory requirements governing shut-off capacity in your region, as well as take into account other considerations such as extreme tank tilt.

Take the following measurements with the valve installed in the tank:

Distance from the 71SO inlet tube flange to the cast lug in the 71SO body (see figures), upper tube length.
Note: the Upper Tube Length must be at least 16" to include the protective bend in the tube.

(D) = _____

Distance from the 71SO inlet tube flange to the top and bottom of lower tube, valve length.
(W) = _____
(U) = _____

Distance from the 71SO inlet tube flange to the bottom of the tank. Note: If a tank bottom protector is present it may be necessary to add this thickness to dimension (OPW 6111 & 61TP models add 0.6")
(B) = _____

From the tank calibration chart provided by tank manufacturer find the dipstick number (Y) which corresponds to the 100% volume.
(Y) = _____

1. To determine complete shut-off percentage:
Subtract upper tube length (D) from distance to tank bottom (B)
(X) = (B) – (D) + 1.5" = _____

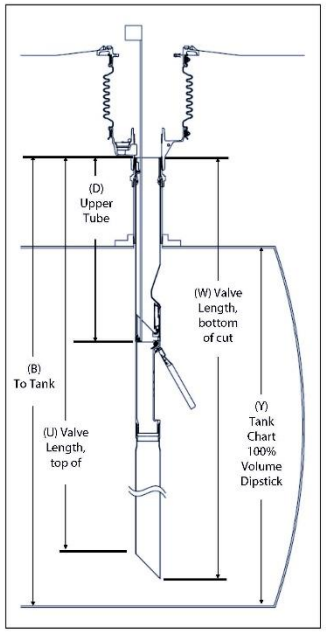
Using the tank calibration chart provided by the tank manufacturer determine the tank capacity at the calculated (X) dimension and the 100% volume (Y) tank capacity.

(X) tank capacity in gallons = _____

(Y) tank capacity in gallons = _____

Complete SO% = (X) capacity / (Y) capacity x100 =

_____



Note: The overfill valve must be installed per AHJ requirements and all applicable local, state, and national codes. If the overfill valve is set above the allowable shut-off percentage the overfill valve must be removed and replaced.

Note: This Appendix only applies to valves installed per Appendix C. See Appendix B for the standard valve installation tank shut off level worksheet.

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Overfill Prevention Inspection – Documentation

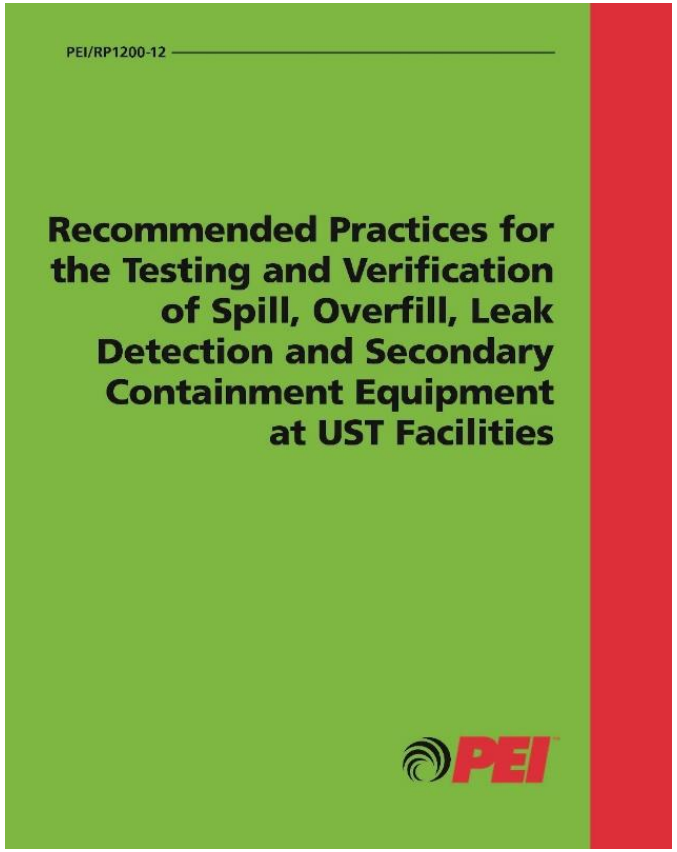
APPENDIX C-5

UST OVERFILL EQUIPMENT INSPECTION
AUTOMATIC SHUTOFF DEVICE AND BALL FLOAT VALVE

Facility Name:			Owner:			
Address:			Address:			
City, State, Zip Code:			City, State, Zip Code:			
Facility I.D. #:			Phone #:			
Testing Company:			Phone #:		Date:	
This data sheet is for inspecting automatic shutoff devices and ball float valves. See PEI/RP1200 Section 7 for inspection procedures.						
Product Grade						
Tank Number						
Tank Volume, gallons						
Tank Diameter, inches						
Overfill Prevention Device Brand						
Type	☐ Automatic Shutoff Device ☐ Ball Float Valve	☐ Automatic Shutoff Device ☐ Ball Float Valve	☐ Automatic Shutoff Device ☐ Ball Float Valve	☐ Automatic Shutoff Device ☐ Ball Float Valve	☐ Automatic Shutoff Device ☐ Ball Float Valve	☐ Automatic Shutoff Device ☐ Ball Float Valve
AUTOMATIC SHUTOFF DEVICE INSPECTION						
1. Drop tube removed from tank?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
2. Drop tube and float mechanisms free of debris?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
3. Float moves freely without binding and poppet moves into flow path?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
4. Bypass valve in the drop tube open and free of blockage (if present)?	☐ Yes ☐ No ☐ Not Present	☐ Yes ☐ No ☐ Not Present	☐ Yes ☐ No ☐ Not Present	☐ Yes ☐ No ☐ Not Present	☐ Yes ☐ No ☐ Not Present	☐ Yes ☐ No ☐ Not Present
5. Flapper adjusted to shut off flow at 95% capacity?*	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
A "No" to any item in Lines 1-5 indicates a test failure.						
BALL FLOAT VALVE INSPECTION**						
1. Tank top fittings vapor- tight and leak-free?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
2. Ball float cage free of debris?		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
3. Ball free of holes and cracks and moves freely in cage?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
4. Vent hole in pipe open and near top of tank?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
5. Ball float pipe proper length to restrict flow at 90% capacity?***	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
A "No" to any item in Lines 1-5 indicates a test failure.						
Test Results	☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail	☐ Pass ☐ Fail
Comments:						

* Use manufacturer's suggested procedure for determining if automatic shutoff device will shut off flow at 95% capacity.
** If a ball float is found to fail the inspection, another method of overfill must be used.
*** Use manufacturer's suggested procedure for determining if flow restriction device will restrict flow at 90% capacity.

Tester's Name (print) _____ Tester's Signature _____



Overfill Prevention Inspection – State Forms

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
ANNUAL OVERFILL PREVENTION DEVICE INSPECTION

- Inspection of all overfill devices is required at installation and at least once every 12 months thereafter.
- In the absence of a recognized industry procedure or manufacturer's recommended practice the "MDEQ Overfill Device Inspection Procedure" may be utilized.
- All new Overfill Prevention Devices installed after October 5, 2018 must be Drop Tube Device or Electronic Alarm.

Date of Inspection

UST Facility			Person Conducting Inspection	
Facility Name	MDEQ Facility ID #		Inspector's Name	
Physical Address			Company	
City	County	State MS	MDEQ Certification #	Expiration Date
UST Owner			Inspector's Signature	Date

Inspection Results for the Year					
Tank ID (product stored)					
Tank Volume (gallons)					
Tank Diameter (inches)					
Overfill device present	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Overfill Device Manufacturer					
Overfill Device Model					
Device is New	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Device in good condition (Note Criteria in Inspection Procedure)	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Ball Float Valve: All accessible tank top fittings are tight	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Ball Float Valve: Tank does NOT have a suction or tank syphon line installed	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Ball Float Valve: Standard drop tubes are installed & in good condition	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Ball Float Valve: Length of Ball Float Valve (inches)					
Ball Float Valve: Height of tank top manway (if applicable) (inches)					
Ball Float Valve: Distance below top of tank that ball float valve is set (inches)					
Ball Float Valve: Indicate tank capacity when flow restriction occurs (%)					
Drop Tube Device: Complete shut off occurs below any ball float nipple in the tank	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Drop Tube Device: Assembly and all gaskets/seals in good condition	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Drop Tube Device: Length of upper tube to the "Reference Point" (inches)					
Drop Tube Device: Length of Fill Riser pipe (Seating position to tank top) (Inches)					
Drop Tube Device: Height of tank top manway (if applicable) (inches)					
Drop Tube Device: Distance below tank top where "Reference Point" is located (Inches)					
Drop Tube Device: Distance between Reference Point and Complete Shut off Point					
Drop Tube Device: Distance below tank top where complete shut off occurs (inches)					
Drop Tube Device: Indicate tank capacity when complete (2nd Stage) shut off occurs (%)					
Electronic Alarm: Alarm is both audible and visible to delivery driver	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Electronic Alarm: Distance below top of tank that electronic alarm is set (inches)					
Electronic Alarm: Indicate tank capacity when alarm occurs (%)					
Electronic Alarm: ATG Printout attached	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	
Inspection result (Pass/Fail)					

Comments:

Alternative Methods

- Alternative methods include: precision type ball float valves that are set to restrict flow at a height greater than 90% tank capacity or drop tube devices are set to completely shut off flow at a height greater than 95% tank capacity.
- Overfill devices installed prior to 10/5/2018 may use alternative methods but must complete pg. 2 of this form in full to "Pass" an overfill device. Alternative methods pg. 2 must be reevaluated every 3 years after initial inspection using an Alternative Method. Any device using an Alternative Method must have pg. 2 of this form completed prior to 10/5/2020 **and** a copy sent to MDEQ. No device will be allowed to pass using Alternative Method if there is NOT a completed form in MDEQ's file for a (device) dated prior to 10/5/2020.

PRODUCED BY THE MISSISSIPPI DEPT. OF ENVIRONMENTAL QUALITY, OFFICE OF POLLUTION CONTROL, UST BRANCH
P.O. BOX 2261 JACKSON, MS 39225 PHONE (601) 961-5171 FAX (601) 961-5093 http://www.mdeq.ms.gov 4/2019

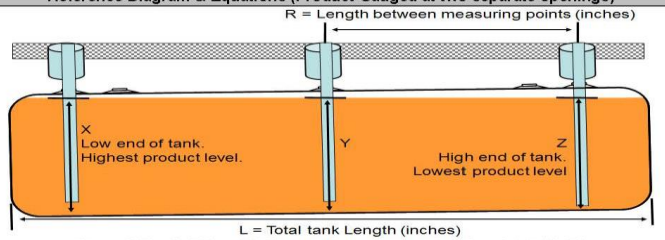
Alternative Method Evaluation

Alternative method cannot be used if:

a.) Tank Volume is less than 4,000 gallons or Overfill Device was installed after 10/5/2018.
b.) If overall tank tilt cannot be determined.
c.) If any of the applicable "Alternative Method Results" are marked as "NO".

MDEQ Facility ID Number:
Date of Inspection:

Reference Diagram & Equations (Product Gauged at two separate openings)



Overall Tank Tilt = (Difference between product levels) * (L/R)

Tank Deflection = Tank Diameter from tank chart (-) The measured tank diameter

Ullage (Inches) at low end when device is at high end = Distance below tank top at High end (-) Tank Tilt (-) Deflection

Ullage (inches) at low end when device is at middle = Distance below tank top at Middle of tank (-) Half of Tank Tilt (-) Deflection

Tank Tilt Determination

Method of Determining Tank Tilt: ☐ Product level gauged at two separate tank openings ☐ Measured with a tank inclinometer ☐ Elevation of each end of tank surveyed with a level ☐ Other (specify):

Tank ID (product stored)				
Tank capacity greater than 4,000 gallons?	☐ Yes ☐No	☐ Yes ☐No	☐ Yes ☐No	☐ Yes ☐No
Tank Tilt can be determined	☐ Yes ☐No	☐ Yes ☐No	☐ Yes ☐No	☐ Yes ☐No
Total Tank Length (inches)				
Length between measuring points (R) (Inches)				
Product level measured at "X" (inches)				
Product level measured at "Y" (inches)				
Product level measured at "Z" (inches)				
Difference between product levels (inches)				
Overall Tank Tilt (inches)				

Tank Deflection Determination

Tank diameter as it appears on tank chart (inches)				
Measured Tank Diameter (Inches)				
Tank Deflection (Inches)				

Device Position and Ullage Calculation

Type of Device: (Ball Float or Drop Tube)		☐ B.F. ☐ D.T	☐ B.F. ☐ D.T	☐ B.F. ☐ D.T	☐ B.F. ☐ D.T
Overfill Device is Installed at	Low End ("X" position)	☐	☐	☐	☐
	Center ("Y" position)	☐	☐	☐	☐
	High End ("Z" position)	☐	☐	☐	☐
Distance of Device below tank top at low end of tank (inches)					
Ullage (gallons): (based on depth of device below tank top at the low end of the tank)					

Alternative Method Results (mark all that apply)

Manifolded tank tops **OR** the overfill devices installed in them appear to be level with each other	☐Yes ☐ No	☐Yes ☐ No	☐ Yes ☐No	☐Yes ☐ No
Ball float is "precision" type and initial restriction occurs 30 min before tank top fittings wetted.	☐Yes ☐ No	☐Yes ☐ No	☐ Yes ☐No	☐Yes ☐ No
Drop tube device is "2 Stage" device and complete shut off occurs before tank top fittings wetted. (Ullage of at least 1 inch required.)	☐Yes ☐ No	☐Yes ☐ No	☐ Yes ☐No	☐Yes ☐ No
Inspection for Alternative Method (Pass / Fail)				

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Simplified Overfill Prevention Inspection Field Worksheet

Tank I.D.	Nominal Tank Diameter	Measured Length of Upper Tube to 95% Mark	–	Measured Riser Height	=	Actual Distance 95% Mark is Below Top of Tank	–	Required Distance Below Top of Tank for 95% Shutoff (from Table)	=	Difference Between Actual and Required Height Below Tank Top	PASS/FAIL Pass – Difference is positive or zero Fail -- Difference is negative
Regular E10	8′	40″	–	30″	=	10″	–	9.5″	=	+0.5″	**PASS**
Premium	8′	38″	–	30″	=	8″	–	9.5″	=	-1.5″	**FAIL**
Regular E0	8′	36.75″	–	27.25″	=	9.5″	–	9.5″	=	0	**PASS**
Diesel	10′	45″	–	32″	=	13″	–	12″	=	+1″	**PASS**
			–		=		–		=		

When I was a Youth – Many, Many Years Ago

YES – What you have suspected about me all along is TRUE

I was, still am and will always be….