Certified Contractor Presentation January 2020

Disclaimer

- The purpose of this class is to:
 - support discussion and learning on a number of difficult topics.
 - to go over MDEQ forms and the intent of the questions asked.
 - go over common issues with forms
 - for MDEQ to provide guidance regarding the forms
 - Sharing of information and tips.
- For all installation, testing, and training questions you should contact the manufacturer of the product to be installed or used for testing.

Where are we?

- 2016 EPA study found
- Diesel tanks:
 - 83% exhibited Moderate to severe
 - 90% of fuel samples taken in study contained ethanol
- Corrosion affected metal components in vapor space of tanks
- No gasoline tanks were studied.



- What about riser pipes? Tank Bungs?
- Expect more failures at tank tops...

ADEQ study 2016

<u>Remember:</u> Ethanol (Renewable fuels) were not widely used until after 2005. (15 years ago)

Tar	nk Grading Scale	What are W	e Finding?				Arizona Depu of Environme	
Grade	Description	Currently, 79 tanks ł						
А	No issues – Gelcoat intact and no visual cracking, degradation, deformation, or discoloration. The tank looks good.				-	Tank Grade	9	
	Minimal to Moderate issues – Minor flaking, blistering, deformation, discoloration, or	Fuel Type	Number of Tanks	Α	В	C	D	E
В	B oxidation. Ideally less than 5% of the tank surfaces exhibit signs of degradation. Signs of aging are present. Structural integrity of the tank is unaffected.	Gasoline	31		48%	29%	23%	
		Diesel	48	4%	86%	8%		2%
	Moderate to Major issues – Heavy flaking, blistering, corrosion, deformation, or minor cracks. Signs of degradation, stress, or structural integrity being effected.	Construction	Number of Tanks	А	В	С	D	E
С	of aging are present. Structural integrity of the tank is unaffected. Moderate to Major issues – Heavy flaking, blistering, corrosion, deformation, or minor cracks. Signs of degradation, stress, or structural integrity being effected. Ideally less than 50% of the tank surfaces exhibit signs of degradation. Further investigation is warranted. Severe issues – Severe cracks or evidence of fuel egress, water ingress, or heavy degradation observed on more than 50% of the tank surfaces. Structural integrity	Steel (asphalt-coated or	6	1	5	1		
	Severe issues – Severe cracks or evidence of fuel egress, water ingress, or heavy	bare steel)						
D	degradation observed on more than 50% of the tank surfaces. Structural integrity has been compromised. Timely investigation is warranted.	Composite (steel/fiberglass)	7		5	2		
E	Tank unable to be assessed – Too much product, fogging, or too little light.	Fiberglass Reinforced Plastic (FRP)	66	2	46	10	7	1

For this project, Tanknology worked with ADEQ to provide general grades reflecting the observed condition of the tank.

Average "age" of school-owned tanks is approximately 28 years since installation. The average of all AZ tanks is approximately 23 years since installation.

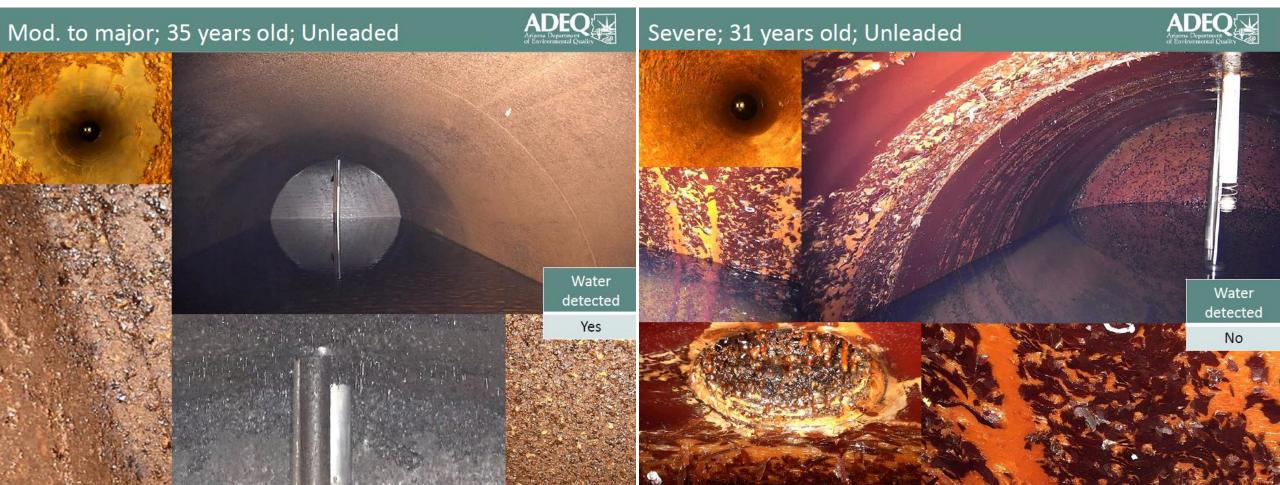
ADEQ example results



ADEQ example results

Steel Tank ~ 1981 install

Fiberglass ~1985 install



Where are we?

Battelle Study 2014

Suitability of LD technology for use in ethanol-blended fuel

Properties of fuel changed:

- Fuel is more acidic
 - Increases with ethanol content
 - Impacts all metal components
- Fuel Density is different.
- Produced some limitations to existing equipment
- Compatibility issues

Property	Gasoline (E0)	E10	E15	I16	E30	E50	E85
Specific Gravity (Dimensionless)	0.722	0.761	0.764	0.765	0.770	0.776	0.790
Density (g/mL) (15.6 °C)	0.722	0.762	0.764	0.766	0.770	0.776	0.788
Coefficient of Thermal Expansion (5–30 °C ⁻¹)	0.0010	0.0012	0.0011	0.0012	0.0013	0.0009	0.0010
Viscosity 25 °C (mm²/S)	0.555	0.557	0.582	0.659	0.698	0.863	1.085
Conductivity (pS/cm)	192	12233	104722	5163	4321111	9204444	8304444
Acidity (% mass)	0.00053	0.0012	0.00093	0.0011	0.0012	0.0016	0.0015

Table 1. Summary of Fuel Property Data Collected*

*Triplicate samples were measured in triplicate for all properties and blends.

Why all the changes?

Battelle Study - 2014

Suitability of LD technology for use in ethanol-blended fuel

- Detection of water intrusion not as clear.
 - Primarily affects:
 - higher throughput sites
 - Sites where GW / fuel levels consistently in lower quadrant of tank

Table 2. Biofuel-Water Mixture (BFW) Phase Separation

	% Water	E0	E10	E15	I16	E30	E50	E85
	0.0	С	С	С	С	С	С	С
	0.25	S	SS	С	S	С	С	С
	0.5	S	SS	С	S	С	С	С
_/	2.5	S	S	S	S	SS	С	С
	5.0	S	S	S	S	S	С	С

C = Composite, SS = Semi-Separated, S = Separated Clearly; All at 25°C

Water adsorbed into fuel with no change in fuel volume.

What we once knew to work and work well for leak detection has changed.

Table 10. Suitability of Existing Leak Detection Technology for Ethanol-Blended Fuel

Why all the changes?

- Fuel properties are needed.
 - Correct program parameters in ATG?
 - E10 is not regular anymore
- Verify correct program parameters with manufactures

LD Category and Technology	Detecting a Leak/	logy Capable of Water Ingress at the ory Level?	Comments			
and Technology	Low-E (up to 15%)	High-E (51 to 83%)				
		VOLUMETRIC ME	THODS			
Automatic Tank	Gauge (ATG) Syster					
Magnetostrictive Probe®			Fuel properties are needed Duid level changes will most likely be detected. Water ingress detection may have limitations when traditional water floats are used.			
Ultrasonic or Acoustic Methods (speed)			Fuel properties are needed; liquid level changes will most likely be detected. Water ingress detection may have limitations wher traditional water floats or conductivity water probes are used.			
Capacitance Probe	to accurately diagno- lenic. In addition, m in a storage tank wi	fore may not be able use the extent of a sultiple liquid phases if make it difficult to belectric constant for a Although used in other UD en, the finditional obes are not	No longer commercially available; rarely used.			
Mass Buoyancy/ Measurement System			Fuel properties are needed; liquid level changes will most likely be detected. Water ingress detection may have limitations when traditional water floats are used.			
Statistical Invent	ory Reconciliation (S	SIR) Methods				
SIR – Manual SIR – Data from			Comparing a change in condition using regularly collected data; assumes no change in data collection process. Fuel properties are needed; liquid level changes will most			
ATG			likely be detected.			
Methods of Relea	se Detection for Pip	ing				
Pressure Decay			Dynamic methods require fuel properties (coefficient of thermal expansion, viscosity)			
Constant Pressure			to calculate or compare against a threshold; properties should remain constant in a giver piping system, so if known, the methods			
Mechanical Leak Detector			should operate properly.			
*See Appendices for Techi Techi	testing methods and re- nology is expected to nology has limitations	stems that was evaluated sults (A, C, D, E, and F). be suitable for indicated with the indicated use be not suitable for indi	ed usee.			

Why all the changes?

- Phase separation may not be detected by traditional ATG water floats.
- Phase separation can mask a leak.
- Extra precautions should be taken.
 - Questions should be raised.
 - Some tips / recommendations provided in this presentation.

LD Category and	Detecting a Leak	ogy Capable of /Water Ingress at tory Level?	Comments		
Technology	Low-E (up to 15%)	High-E (51 to 83%)			
	N	ON-VOLUMETRI	C METHODS		
Vapor Out-of-ta	ank Methods				
Tracers			Tracer must be proven compatible with the product, not foreseen as an issue given the available tracer compounds.		
Liquid Out-of-t	ank Methods				
Hydrocarbon (HC) layer			Reduced petroleum content of high-E blends may produce difficulty in forming a free phase for detection.		
Fuel Sensitive Polymers*			When the product is not dominated by hydrocarbons, the polymers may not react.		
Acoustic Metho	ds				
Sound Detection (Tanks) Sound Detection (Piping)	Multiple liquid phases in a UST or piping and potential interfering sounds will make it difficult to identify air, water, or leaked fuel entering the tank while under vacuum.		No reliable database of sounds expected during leakage. Relies on human interpretation of noises during tank tightnes testing.		
Interstitial Met					
Liquid Filled					
Sensors – liquid ingress* Vacuum Pressure			Should not be affected if liquid (product, water, or mixture of the two) is sufficiently dense or in sufficient quantity to trigger a reading.		
	Phase Detection M	[athodo∆			
Water Float*	Phase Detection M	letnods	Potential effect on operation due to miscibility of water and ethanol-blended fuels.		
Density Float*			Developed for use with E-blended fuel at the bottom of the tank. Will not float until phase separation occurs.		
Conductivity Water Probe			Current flow increases very slowly when there is water ingress into a tank with Low-E. This will not work with High-E because it is conductive.		
Methods for Re	lease Detection in F	Piping			
Pressure Decay*			Static method does not require exact fuel properties.		
^Water detection i Tech Tech	for testing methods and s a requirement of ATA nology is expected to nology has limitation nology is expected to	G systems that was evan to be suitable for indinations with the indicated	luated separately in this paper. cated use. luse.		

Are MS UST systems ripe for the picking "leaking"?

- Aged systems
- MS climate extremely humid
- Tanks breath

- Condensation + ethanol = acid
- Bugs + condensation + biofuels = acid



• We must be diligent with leak detection & preventing leaks & testing.



Why tilt / deflection now?

- More tanks leaking at tank top.
- Vapors. Sewer systems. Etc.

· Al	I new Overfill Prevention Devices inst	alled after	October 5,	2018 mu	ist be D	rop Tub	e Devio	e or Elec	tronic	Alarm.			
	UST Facility	y	•					n Cond	uctin	g Insp	ectio	n	
acilit	y Name		MDEQ Fac	ility ID #	Inspec	tor's Nam	e						
wsin	al Address				Compa	anv							
iy sit	al Address				Compe	arry							
ty	County			State	MDEQ	Certificat	tion #				Expira	tion Date	
STO	Dwner			MS	Inspec	tor's Sign	ature				Date		
	Inspecti	ion Res	ults for th	ne Year	r i						<u> </u>		
	Tank ID (produ					1							
	Tank Volume												
	Tank Diameter	<u> </u>											
	Overfill device					Yes	No	Yes	No	Yes	No	Yes	
	Overfill Device M	anufactur	er										
	Overfill Devic	e Model											
	Device is	New				Yes	No	Yes	No	Yes	No	Yes	
	Device in good condition (Note Crit	eria in Ins	spection Pro	ocedure)	Yes	No	Yes	No	Yes	No	Yes	$\overline{\Box}$
	All accessible tank	top fitting	s are tight			Yes	No	Yes	No	Yes	No	Yes	$\overline{\Box}$
9	Tank does NOT have a suction			e installe	d	Yes	No	Yes	No	Yes	No	Yes	$\overline{\Box}$
Valv	Standard drop tubes are in					Yes	No	Yes	No	Yes	No	Yes	
Float Valve	Length of Ball Float Valve (inches)								_				_
ΕK	Height of tank top manw	ay (if app	licable) (inc	hes)									
Ball	Distance below top of tank that	t ball floa	t valve is se	et (inche	s)								
	Indicate tank capacity when	n flow res	triction occ	urs (%)									
	Complete shut off occurs below	any ball	float nipple	in the ta	ank	Yes	No	Yes	No	Yes	No	Yes	
	Assembly and all gasket	s/seals in	good cond	lition		Yes	No	Yes	No	Yes	No	Yes	
	Length of upper tube to the	Referen	nce Point" (i	inches)									
	Length of Fill Riser pipe (Seati	ng positio	n to tank to	p) (Inch	es)								
	Height of tank top manw	ay (if app	licable) (inc	hes)									
	Distance below tank top where "R	eference	Point" is lo	cated (In	ches)								
	Distance between Reference Po	oint and C	Complete SI	hut off P	oint								
	Distance below tank top where of												
	Indicate tank capacity when comp				rs (%)								
	Alarm is both audible an					Yes	No	Yes	No	Yes	No	Yes	
Aarm	Distance below top of tank that ele												
Aarm						_	_			_	_		_
	ATG Printo					Yes	No	Yes	No	Yes	No	Yes	
	Inspection resul	t (Pass	/Fall)										
om	ments:		Altern										

RONMENTAL QUALITY OFFICE OF POLITION CONTROL UST BRANCH P.O. BOX 2261 JACKSON, MS 39225 PHONE (601) 961-5171 FAX (601) 961-5093 http://www.mdea.ms.go 4/2019

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

Why Change?

- Numbers were all over the place.
- When they were right, matching what they should be for 90 or 95%, it wouldn't match what's installed in the tank.
- Issues with training and / or understanding. We needed clarification from manufacturer's....

Inspection Results for the Year	LUIS			
Tank ID (product stored)	Reg 1	Renz	Acm	Diese
Tank diameter (Inches)	96"	96."	9/ 4	and the second sec
Overfill device present (yes/no)	Ves	Yes	Yes	96"
Device in good condition (yes/no)	Ves	Ves	A CONTRACTOR	yes
All tank top fittings are tight (yealno)	Ves	Ves	yes_	yes
Standard drop tubes are installed in tank fills (yes/no)	Ves	408	Yes	yes
Distance below top of tank that ball float valve is set (inches)	170	17"	Yes-	Yes
Indicate tank capacity when flow restriction occurs (%)	1<95	195	135	1260
Tight fill adapter installed and is in good condition (yes/no-			110	113
Assembly and all gaskets/seals in good condition (yes/no)				
Distance below top of tank that drop tube device is set (inches)				
Indicate tank capacity when complete shut off occurs (%)			-	
Alarm is audible to delivery driver (yes/no)			1 12 100	
Alarm is identifiable by delivery driver (yes/no)			1	
stance below top of tank that electronic alarm is set (inches)				-
Indicate tank capacity when atarm occurs (%)	1	0	-	0
Inspection result (Pass/Fail)	Pass	Pase	Fass	tas

Reasonable, but not 95%.

	Inspection Results for the Year	2017			
	Tank ID (product stored)	T1 Diesel	T2 Diesel	T3 Regular	T4 Premiun
	Tank diameter (inches)	124"	124"	120"	96"
	Overfill device present (yes/no)	Yes	Yes	Yes	Yes
	Device in good condition (yes/no)	Yes	Yes	Yes	Yes
	All tank top fittings are tight (yes/no)	Yes	Yes	Yes	Yes
Ball Float	Standard drop tubes are installed in tank fills (yes/no)	Yes	Yes	Yes	Yes
	Distance below top of tank that ball float valve is set (inches)	3"	3"	3"	3"
Valve	Indicate tank capacity when flow restriction occurs (%)	90	90	90	90
	Tight fill adapter installed and is in good condition (yes/no)	Yes	Yes	Yes	Yes
	Assembly and all gaskets/seals in good condition (yes/no)	Yes	Yes	Yes	Yes
rop Tube	Distance below top of tank that drop tube device is set (inches)	6"	6"	6"	6"
Device	Indicate tank capacity when complete shut off occurs (%)	95	95	95	95
	Alarm is audible to delivery driver (yes/no)	Yes	Yes	Yes	Yes
	Alarm is identifiable by delivery driver (yes/no)	Yes	Yes	Yes	Yes
lectronic	Distance below top of tank that electronic alarm is set (inches)	6"	6"	6"	6"
Alam	Indicate tank capacity when alarm occurs (%)	95	95	95	95
	Inspection result (Pass/Fail)	Pass	Pass	Pass	Pass
omments					
PI	RODUCED BY THE MISSISSIPPI DEPT. OF ENVIRONMENTAL QUALITY	, OFFICE OF	POLLUTION CO	NTROL, UST BRA	NCH

So which is it? None are at 90 or 95%.

- Tank Volume
 - Nominal volume (10,000 gallons)
 - Ok for cylinder tanks. Not FRP.
 - Actual volume (10,152 gallons)
 - Should be used for FRP tanks.
 - Tanks where you have to use tank chart to determine 90 or 95%.
- What is 90 & 95% based off of?
 - Tank Charts, primarily.
 - But there is easier way. (Cylinder tanks)

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY ANNUAL OVERFILL PREVENTION DEVICE INSPECTION

	UST	Facility				F	erso	n Con	ductir	ng Insp	ectio	n
Facility	y Name		MDEQ Fac	ility ID #	Inspect	tor's Nam	ie -					
Physic	al Address				Compa	iny						
0.1		County		State	MDEO	0	· 4				L E in	ation Da
City		County		MS	MDEQ	Certifical	tion #				Expira	ation Da
UST C	Wner				Inspect	tor's Sign	ature				Date	
		Inspection Re		ne Year								
		ID (product store	-									
		Volume (gallons	-									
		Diameter (inche										
		fill device preser				Yes	No	Yes	No	Yes 🗌	No	Ye:
		Device Manufact										
	Overfill Device Model											
		Device in good condition (Note Criteria in Inspection Procedure)					No	Yes	No	Yes	No	Ye:
	Device in good condition (Note Criteria in Inspection Procedure)					Yes	No	Yes	No	Yes	No	Ye:
	All accessible tank top fittings are tight Tank does NOT have a suction or tank syphon line installe					Yes	No	Yes	No	Yes	No	Ye:
Valve					d	Yes	No	Yes	No	Yes	No	Ye:
t <	Standard drop tu		-	ndition		☐Yes	No	Yes Yes	No	Yes	No	□ Ye
Float		of Ball Float Val	· ·									
3	-	top manway (if a										
	Distance below top of				s)					<u> </u>		
	Indicate tank cap				-		-					
	Complete shut off occ	,			INK	Ves Ves	No	Yes	No	Yes	No	Ye
<u>®</u>		all gaskets/seals	-			Yes	No	Yes	No	Yes	No	Ye
evic	Length of upper t											
e D	Length of Fill Riser pi				:s)							
Ē	-	top manway (if ap			aboa)							
Jrop Tube Device	Distance below tank top Distance between Ref									-		
	Distance below tank to											
	Indicate tank capacity w											
- 1		udible and visible			0 (10)	Yes	No	Yes	No	Yes	No	Ye
δE	Distance below top of tar											
Electron		capacity when a										
щ,		TG Printout atta		,		Yes	No	Yes	No	Yes	No	Ye
I	Inspectio	n result (Pas	ss/Fail)									-
Com	ments:											
			Altern	ative I	Netho	ds						
tut ≻ Ov de	ernative methods include: be devices are set to compl verfill devices installed prior vice. Alternative methods p Alternative Method must h	etely shut off flow to 10/5/2018 ma g. 2 must be reev	at a height gre y use alternat aluated every	eater thar ive metho 3 years a	n 95% ta ods but after initi	ank capa must co ial inspe	acity. mplete ction u	pg. 2 c sing an	f this fo Alterna	orm in fu tive Meth	II to "P nod. Ar	ass" ar ny devi

What is 90 or 95%?

Diameter	Depth for 90%	Depth for 95%						
48	7.5	5.0						
60	9.5	6.0						
72	11.5	7.0						
84	13.5	8						
96	15.0	9.5						
108	17.0	10.5						
120	19.0	12.0						
126	19.5	12.5						
132	20.5	13						
144	22.5	14.0						
	Note: All measurements in inches. These depths only apply to cylindrical tanks. NOT to fiberglass tanks.							

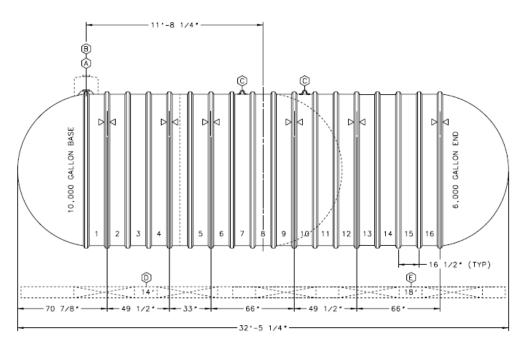
- Cylinder tanks
 - Steel or Composite steel tanks

• Ex:

- 10,000 gallon 96" diameter (STIp3)
- 30,000 gallon 96" diameter (Act 100)
 - 95% for both is 9.5" below tank top
- Just because you put 9.5" on the form doesn't make the device set at 9.5".
- The majority of devices out there are NOT set properly. (No worries. Pg. 2)

What is 90 or 95%?

Fiberglass Tanks



• Base tank is typically the larger volume compartment.

Why you must use the tank chart:

- FRP tanks are NOT cylindrical
- 90 or 95% may vary by up to ~2" from cylinder tanks
- Varying capacities & diameters per manufacturer.
- Manufacturer can be identified by:
 - Color of tank top in STP sumps.
 - Tank diameter.
 - Ex. (96" nominal diameter)
 - Xerxes actual diameter 90.5"
 - Containment Solutions actual diameter is 91.625"
- Model can be identified by:
 - Date of Tank installation.
 - Whether the tank is double or single walled.
- Both can be identified by:
 - Tank chart provided by fuel supplier or tank owner

1. Select

2. Select Fuel Single Wal

3. Select Feet 8 Feet

4. Select

Fiberglass tanks calibration charts.

Containment Solutions

http://containmentsolutions.com/fsproduct-library.html

Field Service & Training Corporate Overview Brochure (Pub No. CSI 3001) Field Services Calibration Charts Double-Wall Tanks (4" Diameter)	
	Field Service & Training
	Corporate Overview Brochure (Pub No. CSI 3001)
	Field Services
	Calibration Charts
2	Fiberglass Tank Calibration Charts
	Double-Wall Tanks (4' Diameter)
	Double-Wall Tanks (6' Diameter)
	Double-Wall Tanks (8' Diameter)
	Double-Wall Tanks (10' Diameter)
	Double-Wall Tanks (12' Diameter)
	Single-Wall Tanks (4' Diameter)
	Single-Wall Tanks (6' Diameter)
	Single-Wall Tanks (8' Diameter)
	Single-Wall Tanks (10' Diameter)

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

ZCL – Xerxes

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ect Document Type	Libra	ry Search	
ation Charts 🗸 🗘			
ect Product Category	Calibi	ration Charts (22)	
v ≎		8-Foot Diameter - 7,000 Gallons Single-Wall Tank Calibration Chart 8ft, 7000 US gallons	PDF
Wall Tanks 🗸 🗧		8-Foot Diameter - 7,000 Gallons Single-Wall Tank Calibration Chart (END Compartment) 8 ft, 7000 US gallons	PDF
ect Tank Diameter		8-Foot Diameter - 8,000 Gallons Single-Wall Tank Calibration Chart 8 ft. 8000 US gallons	PDF
 ✓ ‡ 		8-Foot Diameter - 8,000 Gallons Single-Wall Tank Calibration Chart (END Compartment) 8ft,8000USgallons	PDF
ect Tank Capacity		8-Foot Diameter - 9,000 Gallons Single-Wall Tank Calibration Chart 8 ft, 9000 US gallons	PDF
f Measure ✓ ‡		8-Foot Diameter - 9,000 Gallons Single-Wall Tank Calibration Chart (END Compartment) 8ft,9000 USgallons	PDF
RESET FILTERING TOOL		8-Foot Diameter - 10,000 Gallons Single-Wall Tank Calibration Chart 8ft, 10000 US gallons	PDF

- Tank Diameter
 - Nominal Diameter (96")
 - Ok. For Cylindrical tanks. Not OK for FRP tanks.
 - Ex. (96" nominal diameter FRP tank)
 - Xerxes diameter 90.5"
 - Containment Solutions diameter is 91.625"
 - Highly dependent on Manufacturer.
 - You should get FRP tank diameters from manufacturers tank chart
 - Actual Diameter what you measure.
 - Not necessary for pg. 1
 - Deflection on pg. 2 will use actual diameter if you use pg. 2 on a device.

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY ANNUAL OVERFILL PREVENTION DEVICE INSPECTION

	I new Overfill Prevention De UST	Facility								ng Insp	ectio	n	
acility	y Name		MDEQ Fac	ility ID #	Inspect	tor's Nar							
hysic	cal Address		<u> </u>		Compa	ny							
	I			1		· ·							
City		County		State MS	MDEQ	Certifica	ation #				Expira	ition Date	
JST C	Owner			mo	Inspect	tor's Sig	nature				Date		
	I	Inspection Rest	ults for th	ne Year									
	Tank I	ID (product stored)	ł										
	Tank	Volume (gallons)											
	Tank	Diameter (inches)											
	Over	fill device present				Yes	i 🗌 No	Yes	No	Yes	No	Yes	
		Device Manufacture	er										
		rfill Device Model											
		Device is New				Yes	5 🗌 No	Yes	No	Yes	No	Yes	
	Device in good condition (-	·	ocedure))	Yes	lane la	Yes		Yes	No	Yes 🗌	
		sible tank top fitting				Yes	i 🗌 No	Yes	No	Yes	No	Yes	
2	Tank does NOT have				d	Yes		Yes	No	Yes	No	Yes	
N <		bes are installed &	-	ndition		☐Yes	i 🗌 No	Yes	No	Ves	No	Ves 🗌	
Float Valve		of Ball Float Valve											
Ball F	Height of tank top manway (if applicable) (inches)												
â	Distance below top of tank that ball float valve is set (inches)												
		acity when flow rest							-		-		_
	Complete shut off occ	-			INK	Yes		Yes	No	Yes Ves	No	Yes	<u> </u>
9		all gaskets/seals in	-			Yes	No	Yes	No	Yes	No	Yes	
evic		ube to the "Referen			>								
ê	Length of Fill Riser pip				: \$)								
<u></u>		top manway (if appl			-hee)								
Drop Tube Device	Distance below tank top Distance between Refe												
ă	Distance below tank to												
	Indicate tank capacity wh												
-		udible and visible to			0 (10)	Yes	No	Yes	No	Yes	No	Yes	
ĒΕ	Distance below top of tan												
Electronic		capacity when alar											
Ť,		TG Printout attache	,			Yes	i 🗌 No	Yes	No	Yes	No	Yes	
	Inspection	n result (Pass	/Fail)						_	<u> </u>	_		
2000	ments:												_

Overnil devices installed prior to 10/5/2018 may use alternative methods but must complete pg. 2 of this form in full to "Pass" an overnil 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

- You should still measure the tanks diameter.
 - Confirm that the tank chart your using for FRP tank is accurate.
 - confirm that it is a steel tank <u>and</u> it's nominal diameter.
 - Ex. If you measure 90.5" indicates it may not be Steel. (Xerxes FRP 96" diameter tank is 90.5")
 - Check MDEQ registration for the tank to verify what it is.
 - Spot check Cathodic Protection on tank if you have equipment.
 - FRP tank you should not get a CP reading at tank bottom.
 - FRP tank all tank riser pipes should be isolated from one another.

Connect volt meter leads to 2 riser pipes. If 6 mV or less both riser pipes are isolated and tank is either FRP or steel tank with isolation unions.

- You should see both of these with a Fiberglass tank.
- Check with delivery company, tank owner, and / or installer to verify.

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY ANNUAL OVERFILL PREVENTION DEVICE INSPECTION

× AI	I new Overfill Prevention De		October 5,	2018 mu	st be D						o otio	
Facilit	y Name	Facility	MDEQ Faci	lity ID #	Inspect	or's Nam		n Con	auctir	ng Insp	ectio	n
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Physic	al Address				Compa	ny						
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<i>,</i>				MS							-	
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		nspection Res		ie rear								
		D (product stored) Volume (gallons)										
		Diameter (inches)				-	_		-		-	
		fill device present				Yes	No	Yes	No	∐ Yes	No	Yes N
·		Device Manufactur	er									
		fill Device Model										
		Device is New				Yes	No	Yes	No	Yes	No	Yes N
	Device in good condition		· · · · · · · · · · · · · · · · · · ·	ocedure)		Yes	No	Yes	No	Yes	No	Yes N
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	Indicate tank capacity when flow restriction occurs (%)											
	Complete shut off occ				ink	Yes	No	Yes	No	Yes	No	Yes N
		all gaskets/seals in	-			Yes	No	Yes	No	Yes	No	Yes N
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	be devices are set to comple verfill devices installed prior							00.20	f this fo	urm in ful	I to "P	ass" an over
	vice. Alternative methods p											
	Alternative Method must ha											

- Automatic fails:
 - OF device is not present.
 - Device is New (ball float)?
 - If a ball float is new or has been recently modified, even if it is set correctly it automatically fails.
 - Device not in good condition.
 - Ball float cage, nipple, ball.
 - Drop tube difficult to raise, won't activate, upper tube not liquid tight, missing seals

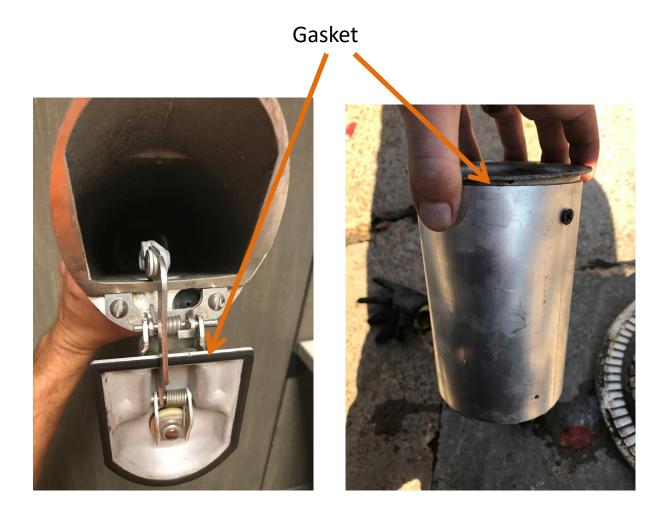
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D T d	Distance below tank top	where "Reference	Point" is loc	ated (In	ches)											
Drop	Distance between Ref	erence Point and O	Complete Sh	ut off P	oint											
	Distance below tank to															
	Indicate tank capacity where	en complete (2 nd S	Stage) shut (off occu	rs (%)											
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		n result (Pass	i/Fall)													
Com	ments:															

EPARTMENT OF ENVIRONMENTAL QUALITY

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.

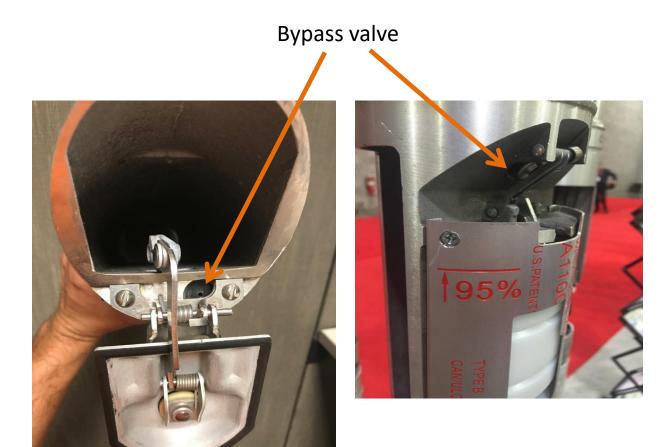
What is good condition for DT device?

- DT upper tube cannot have holes or seams.
- Gaskets present & in good shape?



What is good condition for DT device?

- Is the 2nd Stage bypass valve blocked?
- Does the 2nd Stage bypass valve close completely?
- Can you tell?
- In general if what you see / feel is normal for OPV preform visual inspection as you normally would.



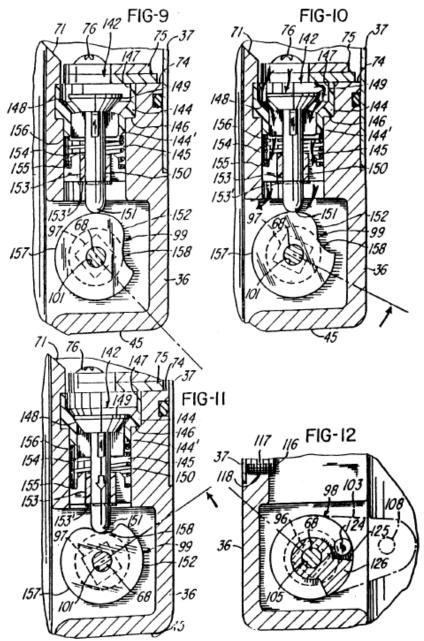
Annual Overfill Prevention Dev

What is good condition for DT device?

- OPW 61 & 71 SO bypass valve.
- Fig 9 & 10 bypass valve normally open.
 - Held open by gear.
- Fig 11 is point of restriction.
 - Spring closes bypass.
 - Can you feel it closing?

Question for 2 stage devices:

If it did close completely with fuel in upper tube what would reset it?



Annual Overfill Prevention Device Inspection Ball Floats

- All Accessible tank top fittings are tight?
- If your answer is NO the BF automatically fails.
 - Unless you FIX the vapor leak before continuing.

≻ In	spection of all overfill device the absence of a recognize	ed industry proced				-				Overfill	Date	of Inspec
	evice Inspection Procedure" I new Overfill Prevention De		r October 5.	2018 mu	ist be l	Drop Tul	be Devi	ce or Ele	ectronic	Alarm.		
		Facility								ng Insp	ectio	n
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City		County		MS	MDE	2 Gerunica	10011				Expire	non Date
UST C	Owner				Inspe	ctor's Sig	nature				Date	
		Inspection Res	ults for th	ne Year								
	Tank	D (product stored)					1				
	Tank	Volume (gallons)										
	Tank	Diameter (inches))									
	Over	fill device present				Yes	No	Yes	No	Yes	No	Yes
	Overfill	Device Manufactu	rer									
	Overfill Device Model											
	Device is New					Yes	No	Yes	No	Yes	No	Yes
	Device in good condition (Note Criteria in Inspection Procedure			ocedure))	Yes	No	Yes	No	Yes	No	Yes
	All access	ible tank top fittin	gs are tight			Yes	No	Yes	No	Yes	No	Yes
	Tank does NOT have a suction or tank syphon line installe				d	Yes	No	Yes	No	Yes	No	Yes
Float Veb	Standard drop tubes are installed & in good condition					Yes	No	Yes	No	Yes	No	Yes
oat	Length of Ball Float Valve (inches)											
ц Ш	Height of tank t	op manway (if app	olicable) (inc	:hes)								
Ball	Distance below top o	f tank that ball floa	at valve is se	et (inche	s)							
	Indicate tank capa											
	Complete shut off occ	urs below any bal	l float nipple	in the ta	ank	Yes	No	Yes	No	Yes	No	Yes
	Assembly and a	all gaskets/seals i	n good cond	lition		Yes	No	Yes	No	Yes	No	Yes
Nice	Length of upper to	ube to the "Refere	nce Point" (i	inches)								
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Electronic	Distance below top of tan											
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		TG Printout attach				Yes	No	Yes	No	Yes	No	Yes
	Inspectio	n result (Pass	s/Fall)									

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.

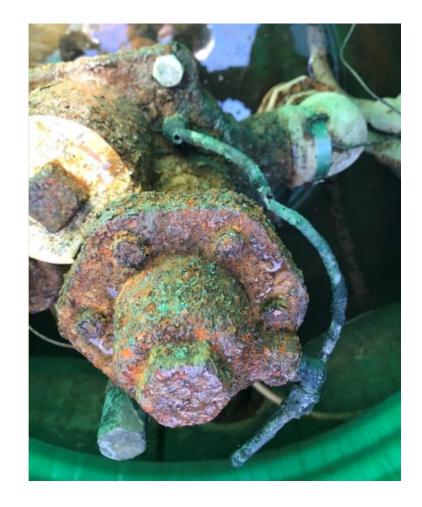
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4/2019

Ball Float – All Accessible tank top fittings

- In order for BF to function properly the tank must be vapor tight.
- Inspect:
 - Spill Bucket drain valves (hydro test)
 - LLD vent tubes
 - ATG wiring / plug on ATG caps.
 - All riser pipe caps.
 - All riser pipes in sumps. (STP)
 - Internal corrosion. Visually inspect outside of pipe for holes.



Annual Overfill Prevention Device Inspection Ball Floats

- Ball float cannot be used with:
 - Tank Syphon (manifold) line
 - Suction Dispensers
- Why?
 - Ball float seats in tank being filled.
 - Will you see hose jump? No.
 - Forces fuel into other tank faster.
 - The tank being dropped into will continue to fill until device in 2nd or 3rd tank activate.
 - Can overfill the tank being dropped into.

	I new Overfill Prevention De	Facility	October 5,	2010 110	st be bi					a atta	
acilit	ty Name	Facility	MDEQ Fac	ility ID #	Inspect	or's Name	SO	n Conductin	ig insp	ectio	n
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hysi	cal Address				Compa	ny					
City		County		State	MDEQ	Certification	#			Expira	tion Date
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		nspection Res	ults for th	ne Year							
		D (product stored)									
		Volume (gallons)									
		Diameter (inches) fill device present				Yes 🗌	No	Vec Ne	UVer I	Ne	Yes
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	All access	ible tank top fitting	s are tight			Yes 🗌	No	Yes No	Yes	No	Yes
	Tank does NOT have			e installe	d	Yes 🗌	No	Yes No	Yes	No	Yes
	Standard drop tuk	es are installed &	in good co	ndition		Yes 🗌	No	Yes No	Yes	No	Yes
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ä	Distance below top of tank that ball float valve is set (inches				s)						
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	Indicate tank capacity wh	en complete (2nd S	tage) shut	off occu	rs (%)						
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DEPARTMENT OF ENVIRONMENTAL QUALITY

Annual Overfill Prevention Device Inspection Ball Floats

- Standard drop tube should be present & vapor tight.
- A coaxial standard drop tube is the same thing.
 - It is not vapor tight and should be replaced if using BFS.





Inspection of all overfill devices is required at installation and at least once every 12 months thereafter. In the absence of a recognized industy procedure or manufacturer's recommended practice the "MOEQ Overfill Device inspection Procedure" may be utilized. Insection Procedure" may be utilized. All new Overfill Prevention Devices installed after October 5, 2018 must be Drop Tube Device or Electronic Alarm. Insector's Recommended practice the "MOEQ Overfill Prevention Devices installed after October 5, 2018 must be Drop Tube Device or Electronic Alarm. Physical Address Company Inspection Results for the Year Physical Address Company Date UST Owner Inspection Results for the Year Expiration Date Tank ID (product stored) Tank ID (product stored) Expiration Date Tank Diameter (inches) Inspection Results for the Year Inspection Results for the Year Overfill Device Model Ves No Yes No Yes No 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 All accessible tank top fittings are tight Yes No Yes No Yes No Yes No Yes No Height of tank tap and that tall float view is set (inches) Inditate tank capacity		ANNU	JAL OVERFI	LL PREVE	NTION	DEVICE	INSPECT	ION		
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Device in good condition (Note Criteria in Inspection Procedure) Yes No Yes										
All accessible tank top fittings are tight Yes No										
Tank does NOT have a suction or tank syphon line installed Yes No Yes <t< td=""><td></td><td>-</td><td>-</td><td>-</td><td>re)</td><td></td><td></td><td></td><td></td><td></td></t<>		-	-	-	re)					
Standard drop tubes are installed & in good condition Yes No Yes No<				-						
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Indicate tank capacity when flow restriction occurs (%) Indicate tank capacity when flow restriction occurs (%) Complete shut off occurs below any ball float nipple in the tank Yes No		-								
Complete shut off occurs below any ball float nipple in the tank Yes No Yes	ä	Distance below top o	of tank that ball floa	t valve is set (inc	nes)					
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Length of upper tube to the "Reference Point" (inches) Image: Constraint of the image: Constraint of		Complete shut off occ	curs below any ball	float nipple in the	tank	Yes No	Yes No	Yes _	No Yes	No
Distance below tank top where complete shut off occurs (inches) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) ATG Printout attached Yes No Yes No Yes No Inspection result (Pass/Fail) Inspection result (Pass/Fail) Inspection result (Pass/Fail)		Assembly and	all gaskets/seals in	good condition		Yes No	Yes No	Yes	No Yes	No
Distance below tank top where complete shut off occurs (inches) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when administry of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) ATG Printout attached Yes No Inspection result (Pass/Fail) Inspection result (Pass/Fail)	vioe	Length of upper to	ube to the "Referen	ce Point" (inches)					
Distance below tank top where complete shut off occurs (inches) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when administry of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) ATG Printout attached Yes No Inspection result (Pass/Fail) Inspection result (Pass/Fail)	De	Length of Fill Riser pi	pe (Seating position	n to tank top) (In	:hes)					
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Distance below tank top where complete shut off occurs (inches) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Indicate tank capacity when administry of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) ATG Printout attached Yes No Inspection result (Pass/Fail) Inspection result (Pass/Fail)	Ē	Distance below tank top	where "Reference	Point" is located	(Inches)					
Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) Image: Comments: Co	å	Distance between Ref	erence Point and C	omplete Shut of	Point					
Alarm is both audible and visible to delivery driver Yes No		Distance below tank to	p where complete	shut off occurs (i	nches)					
Bistance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Yes No ATG Printout attached Yes No Inspection result (Pass/Fail) Yes No		Indicate tank capacity where	hen complete (2 nd S	tage) shut off oc	curs (%)					
Arig Printout attached Yes No Yes No Inspection result (Pass/Fail)	o	Alarm is both a	udible and visible to	o delivery driver		Yes No	Yes No	Yes 🗌	No Yes	No
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Aig Printout attached Yes No Yes No Inspection result (Pass/Fail)	Aa	Indicate tank	capacity when alar	m occurs (%)						
Comments:	ш	A	TG Printout attache	ed		Yes No	Yes No	Yes	No Yes	No
Comments:		Inspectio	n result (Pass	/Fail)						
Alternative Methods	Com		,							
				Alternative	Metho	ds				

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

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.mdea.ms.gov

4/2019

Ball Float Measurements

 There is a great deal of confusion about how to measure length a ball float.

_					
	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fueling
	Overfill Device Model	53 VML	53 VML	30 MV	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
<u>v</u> e	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
/alve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
	Length of Ball Float Valve (inches)	20	6	6	6
Ball F	Height of tank top manway (if applicable) (inches)				
۳	Distance below top of tank that ball float valve is set (inches)				
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
_	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
vice	Length of upper tube to the "Reference Point" (inches)				
å	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
lube	Height of tank top manway (if applicable) (inches)				
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)				
Dro	Distance between Reference Point and Complete Shut off Point				ſ
	Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
o	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)				
Ala	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	/			

Ball Float Measurements

Example:

- This is NOT a 21" ball float.
 - Cage doesn't count.
 - This is wrong.



Ball Float Measurements

- Measure from bottom of tube to top of nipple.
- Nipple may be slightly in adapter housing.
 - Ex. Shown 18" ball float.
- Is it precision or a normal BF?
 - Normal orifice 1/8 " diameter
 - Precision orifice 1/16 " diameter



Tank Top Manway

- Usually only on Fiberglass Tanks.
- If you do NOT have a tank manway, <u>or</u> the device is not installed in it then you should leave this
 - blank on the form
 - or enter 0".
 - It will not affect your measurements.

	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes N
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fueli
	Overfill Device Model	53 VML	53 VML	30 MV	EBW 308
	Device is New	Yes No	Yes No	Yes No	Yes N
	Device in good condition (Note Criteria in Inspection Procedure)	Yes No	Yes No	Yes No	Yes N
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes N
e	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes N
at Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes N
at	Length of Ball Float Valve (inches)	20	6	6	6
	Height of tank top manway (if applicable) (inches)	5	0	0	0
Ξ	Distance below top of tank that ball float valve is set (inches)				
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes N
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes N
/ice	Length of upper tube to the "Reference Point" (inches)				
<u>B</u>	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
qr	Height of tank top manway (if applicable) (inches)				
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)				
Dro	Distance between Reference Point and Complete Shut off Point				
_ [Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
o	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes
Electronic Alarm	Distance below top of tank that electronic alarm is set (inches)				
Ala	Indicate tank capacity when alarm occurs (%)				
• [ATG Printout attached	Yes No	Yes No	Yes No	Yes
	Inspection result (Pass/Fail)				

Height of Tank Top Manway?

• If BF is installed in one of these risers you must measure height of tank top manway.



	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fuelin
	Overfill Device Model	53 VML	53 VML	30 MV	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
ę	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
at Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
at	Length of Ball Float Valve (inches)	20	6	6	6
	Height of tank top manway (if applicable) (inches)	5	0	0	0
•	Distance below top of tank that ball float valve is set (inches)				
ſ	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
lice	Length of upper tube to the "Reference Point" (inches)				
Ď	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
lbe	Height of tank top manway (if applicable) (inches)				
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)				
20	Distance between Reference Point and Complete Shut off Point				
	Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
o	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
ectroni Alarm	Distance below top of tank that electronic alarm is set (inches)				
Electronic	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)				

Distance below top of tank that ball float valve is set

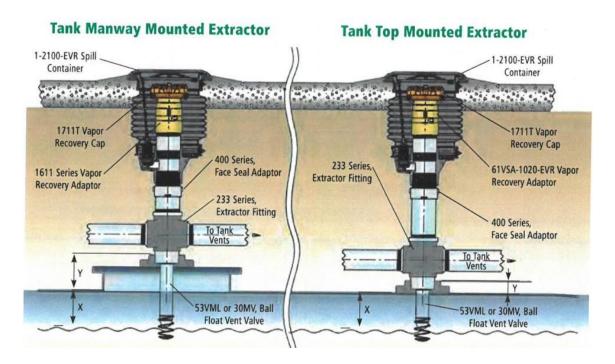
• If no Tank top manway it is the length of the BF.

 If tank top manway you have to subtract it out.

(Next Slide example)

	Inspection Results for the Year			•	
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fueling
	Overfill Device Model	53 VML	53 VML	30 MV	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
e	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
Eloat Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
oat	Length of Ball Float Valve (inches)	20	6	6	6
Ē	Height of tank top manway (if applicable) (inches)	5	0	0	0
	Distance below top of tank that ball float valve is set (inches)	15	6	6	6
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
vice	Length of upper tube to the "Reference Point" (inches)				
Ğ	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
nbe	Height of tank top manway (if applicable) (inches)				
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)				
Dro	Distance between Reference Point and Complete Shut off Point				
	Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
o	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)				
No ot	Indicate tank capacity when alarm occurs (%)				
_ <u>₩</u> <					
Ĕ	ATG Printout attached	Yes No	Yes No	Yes No	Yes No

Tank Top Manway calculation



• Note: Image is for Ball Float but it also applies to drop tube devices installed on tank top manways.

- Manway usually 4 7" above tank top
- Tank manway mounted extractor
 - Use your BF measurement to subtract out the height of the tank manway.
 - Example: 20" ball float tube (measured)

 <u>5</u>" height of tank top manway
 <u>15</u>" below tank top
- If 90% is not 15" then BF device fails.
- Same calculation on pg. 1 for Drop tubes.

Annual Overfill Prevention Device Inspection BF results pg. 1

• Determine % capacity when flow restriction occurs.

• If:

- Set @ 90% or less it passes.
- Not set at 90% it fails, unless:
 - It is a precision BF and
 - You use pg. 2 to document it.

	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fuelin
	Overfill Device Model	53 VML	53 VML	30 M∨	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
ę	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
Float Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
oat	Length of Ball Float Valve (inches)	20	6	6	6
Ē	Height of tank top manway (if applicable) (inches)	5	0	0	0
	Distance below top of tank that ball float valve is set (inches)	15	6	6	6
	Indicate tank capacity when flow restriction occurs (%)	90%	97%	97%	97%
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
Γ	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
/ice	Length of upper tube to the "Reference Point" (inches)				
Ğ	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
ad [Height of tank top manway (if applicable) (inches)				
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)				
Dro	Distance between Reference Point and Complete Shut off Point				
_	Distance below tank top where complete shut off occurs (inches)				
ſ	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
с	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)				
lectron Alarm	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
L	Inspection result (Pass/Fail)	Pass	Fail	Fail	Fail

Annual Overfill Prevention Device Inspection BF results pg. 1

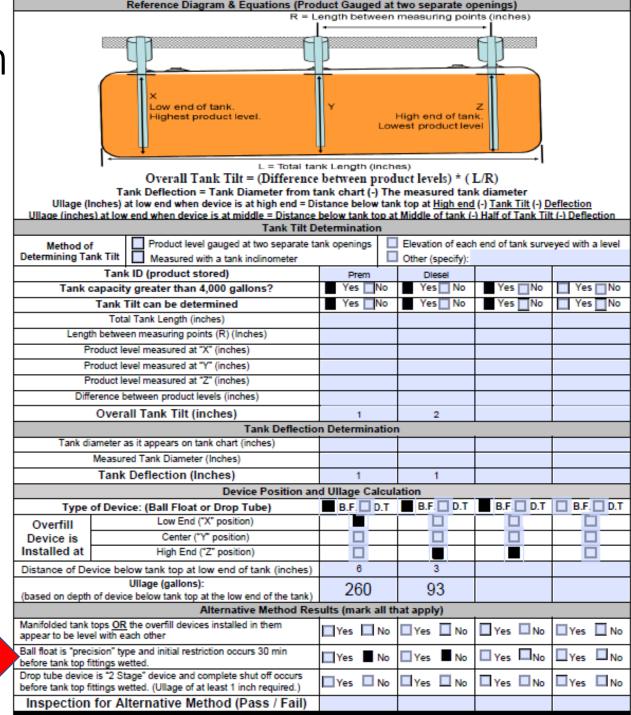
- Is it precision or a normal BF?
 - Normal orifice 1/8 " diameter
 - Precision orifice 1/16 " diameter
- OPW 53 VML is not precision.
- OPW 30 MV is retrofit orifice. it is precision.
- EBW 308 it is precision.
 (Some EBW 308 valves are NOT precision. Depends on Length.)
- As it sits:
 - Regular Passes @ 90 %
 - Plus Fails is not precision.
 - Prem & Diesel may pass if you choose to use pg. 2

	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fueling
	Overfill Device Model	53 VML	53 VML	30 MV	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
9	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
oat	Length of Ball Float Valve (inches)	20	6	6	6
Ē	Height of tank top manway (if applicable) (inches)	5	0	0	0
B	Distance below top of tank that ball float valve is set (inches)	15	6	6	6
	Indicate tank capacity when flow restriction occurs (%)	90%	97%	97%	97%
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	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)				
De	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
ldbe	Height of tank top manway (if applicable) (inches)				
p T(Distance below tank top where "Reference Point" is located (Inches)				
Dz	Distance between Reference Point and Complete Shut off Point				
	Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
U	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
ectroni Alarm	Distance below top of tank that electronic alarm is set (inches)				
Electronic	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	Pass	Fail	Fail	Fail

Annual Overfill Prevention Device Inspection Alternative Method BF's pg. 2

- Will cover steps for tilt & deflection in DT section of presentation.
- For this example I provided #s
- The main question is:

"Does initial restriction occur 30 min before tank top fittings are wetted"?



"Does initial restriction occur 30 min before tank top fittings are wetted"?

- OPW 30MV requires 308 gallons
- EBW 308 valve requires ?? Gallons
 - But these assume what?
 - No tilt?
 - No deflection?
- In our example:
 - Prem tank OPW 30 MV valve not 308 gallons at the low end. <u>It Fails</u>.
 - Diesel EBW 308 valve I couldn't find gallons for it. <u>It Fails</u>.

OPW Tank Ullage Calculator

- 30 minutes x 5GPM = 150 gallons
- Ullage compression rate* is 27% after the ball seats
- 150 gallons ÷ .73 (1- ullage compression rate) = 205.48 gallons
- 205.48 x 1.5 (OPW recommended safety factor) = 308.22 gallons
- Approximately 308 gallons required ullage
- *Ullage compression rate will vary with head pressure.

	Device Position an				
Type of	of Device: (Ball Float or Drop Tube)	B.F. 🗌 D.T	B.F. D.T	B.F. D.T	B.F. D.T
Overfill	Low End ("X" position)				
Device is	Center ("Y" position)				
Installed at	High End ("Z" position)				
Distance of De	vice below tank top at low end of tank (inches)	6	3		
on depth	Ullage (gallons): of device below tank top at the low end of the tank)	260	93		
	Alternative Method Res	ults (mark all	that apply)		
Manifolded tank t appear to be leve	tops <u>OR</u> the overfill devices installed in them el with each other	Yes 🗌 No	Yes No	Yes No	Yes No
Ball float is "preci before tank top fi	ision" type and initial restriction occurs 30 min ttings wetted.	Yes No	Yes No	□ _{Yes} □ _{No}	□ _{Yes} □ _{No}
	is "2 Stage" device and complete shut off occurs ttings wetted. (Ullage of at least 1 inch required.)	Yes No	Yes No	Yes No	Yes No
Inspection	for Alternative Method (Pass / Fail)	FAIL	FAIL		

BF results pg. 1

- As it sits:
 - Regular Passes @ 90 %
 - Plus Fails is not precision.
 - Prem Fails not 308 gallons ullage @ low end of tank on pg. 2
 - Diesel Fails undetermined gallons required on pg. 2.
- The BF "Alternative Method" main question:

"Does initial restriction occur 30 min before tank top fittings are wetted"?

Requires ALL tank fittings to be vapor tight. How often is that true?

	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Plus	Premium	Diesel
	Tank Volume (gallons)	10,000	10,000	10,000	10,000
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fuelir
	Overfill Device Model	53 VML	53 VML	30 MV	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
e	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
oat	Length of Ball Float Valve (inches)	20	6	6	6
Ē	Height of tank top manway (if applicable) (inches)	5	0	0	0
Ba	Distance below top of tank that ball float valve is set (inches)	15	6	6	6
	Indicate tank capacity when flow restriction occurs (%)	90%	97%	97%	97%
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
lice	Length of upper tube to the "Reference Point" (inches)				
Drop Tube Device	Length of Fill Riser pipe (Seating position to tank top) (Inches)				
pe	Height of tank top manway (if applicable) (inches)				
p T (Distance below tank top where "Reference Point" is located (Inches)				
Do	Distance between Reference Point and Complete Shut off Point				
_	Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
o	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)				
lectron Alarm	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	Pass	Fail	Fail	Fail

Annual Overfill Prevention Device Inspection Ball Float Repairs

- After 10/5/18 ball floats can NOT be replaced / modified / or repaired.
- All previous repairs should have used "manufacturer's" parts.
- Would this elongation work?
 - Yes, it likely would but how well?
 - Where is the orifice at?
 - It's not near the top where the original manufacturer requires it to be.
- This BF is now your product. You are it's manufacturer.
 - No UL listing for it.
 - Do you really want this liability?
- BF requires riser pipes to be vapor tight. Most are not.
- Why do you think the EPA banned Ball Floats immediately with 2018 regs?
- Leak (vapors or fuel) / tanks over filled = "LAWSUIT"
 - WHO WILL THEY SUE?
 - The Manufacturer? (You if you modified this.)
 - Company who passed it? (You if you don't fail this.)



Ball Float Repairs / modifications



So when you see this:

Who is the manufacturer?

- It's Billy bobs device....
- Should a lawyer ask you or Billy Bob for the UL listing for this device can you provide it?

NO...

	the absence of a recognized industry procedure evice Inspection Procedure" may be utilized.	e or manufa	acturer's	recomr	mended pr	actic	e the "MDEQ	Overfill		
	I new Overfill Prevention Devices installed after C	October 5, 2	018 mu	st be Dr	op Tube D)evice	e or Electronic	Alarm.		
	UST Facility				Per	son	Conductin	a Insp	ectio	n
Facilit		MDEQ Facili	ty ID #	Inspecto	or's Name					
Physic	cal Address			Compar	ny					
City	County		State	MDEQ	Certification	#			Expira	ation Da
UST C			MS		de Circut				Date	
USIC	Jwner			inspecto	or's Signatu	re			Date	
	Inspection Resul	ts for the	Year							
	Tank ID (product stored)	to for the	rear			-		1		
	Tank Volume (gallons)					-				-
	Tank Diameter (inches)									-
	Overfill device present				Yes 🗌	No	Yes No	Yes	No	ΠYe
	Overfill Device Manufacturer	r								
	Overfill Device Model					-				
,	Device is New				Yes 🗌	No	Yes No	Yes	No	Ye
	Device in good condition (Note Criteria in Insp	ection Pro	cedure)		Yes 🗌	No	Yes No	Yes	No	Ye
	All accessible tank top fittings	are tight			Yes 🗌	No	Yes No	Yes	No	Ye
8	Tank does NOT have a suction or tank sy	yphon line	installe	d	Yes 🗌	No	Yes No	Yes	No	🗌 Ye
Float Valve	Standard drop tubes are installed & in	n good con	dition		Yes 🗌	No	Yes No	Yes	No	Ve 🗌
loat	Length of Ball Float Valve (ir									
Ball F	Height of tank top manway (if applic									
ő	Distance below top of tank that ball float	s)								
	Indicate tank capacity when flow restri									
	Complete shut off occurs below any ball flo			nk		No	Yes No	Yes	No	Ye
8	Assembly and all gaskets/seals in g				Yes	No	Yes No	Yes	No	☐ Ye
evic	Length of upper tube to the "Reference			-		-+				
Tube Device	Length of Fill Riser pipe (Seating position Height of tank top manway (if applic			-s)						
Ę.	Distance below tank top where "Reference Po			chee)		-+				<u> </u>
Drop	Distance between Reference Point and Co					+				<u> </u>
•	Distance below tank top where complete sh					+				-
	Indicate tank capacity when complete (2 nd Sta			-						
0	Alarm is both audible and visible to		Yes 🗌	No	Yes No	Yes	No	Ye		
ĒE	Distance below top of tank that electronic alar			ſ						
Electronic	Indicate tank capacity when alarm	n occurs (%	6)							
ш	ATG Printout attached	1			Yes	No	Yes No	Yes	No	Ye
	Inspection result (Pass/F	ail)								
Com	ments:									

SSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Alternative methods include, precision type ban hoar varies that are set to result in our at a neight greater than so what a beight greater than so what are set to completely shu to the precision of the precision o

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.

Annual Overfill Prevention Device Inspection Ball Floats & Drop Tube Shut-off Devices

- If tank has a Ball Float & drop tube
- Drop Tube device is the "Primary" device
- You must:
 - Completely remove ball float including nipple.
 - Or Drop tube MUST be set to shut off below the ball float
 - Record measurement for BF and DT on pg. 1
 - You MUST use Pg. 2 to prove DT set below BF.
- Why?
 - If BF activates first, DT will not slam shut because fuel flow is already restricted by BF.
 - You have 2 orifices for vapors to escape.
 - 1 in ball float & 1 in Drop tube device
 - Tank will fill at least 2 times as fast as it should
 - If no ball in ball float, fuel will fill vent pipe possibly burping fuel.

	evice Inspection Procedure" I new Overfill Prevention De		October 5,	2018 mu	st be [Drop Tub	e Devic	e or Electronic	Alarm.		
	UST	Facility				F	erso	n Conductin	ig Insp	ectio	n
Facilit	y Name		MDEQ Faci	ility ID #	Inspe	tor's Nam					
Physic	cal Address				Comp	any					
City		County		State MS	MDEC	Certificat	tion #			Expira	tion Date
UST (Dwner				Inspe	tor's Sign	ature			Date	
		Inspection Res	ults for th	ne Year							
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		Diameter (inches)									
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Overfill device present Yes No Yes No Overfill Device Manufacturer											
		rfill Device Model									
		Device is New				Yes	No	Yes No	Yes	No	Yes 🗆
	Device in good condition		pection Pr	ocedure)		Yes		Yes No	Yes	No	Yes
	-	sible tank top fitting		TYes		Yes No	Yes	No	Yes		
	Tank does NOT hav		d	Yes		Yes No	Ves	No	Yes		
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	Complete shut off occ				nk	☐ Yes	No	Yes No	Yes	No	Yes
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Devi	Length of Fill Riser pi		-	-	e)						
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ectron Aarm	Indicate tank	capacity when alar	m occurs (%)							
Ē	A	TG Printout attache	ed			Yes	No	Yes No	Yes	No	Yes
	Inspectio	n result (Pass	/Fail)								
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			Altern	ative	/leth	ods					
	ternative methods include: p							eight greater th	an 90%	tank ca	apacity or
≻ O de an	be devices are set to comple verfill devices installed prior evice. Alternative methods pro a Alternative Method must has using Alternative Method	to 10/5/2018 may u g. 2 must be reevalu ave pg. 2 of this for	use alternati lated every m complete	ive metho 3 years a d prior to	ds bu fter ini 10/5/2	t must co tial inspe 020 <u>and</u>	ction us a copy	sing an Alternat sent to MDEQ	tive Meth). No dev	od. An ice will	y device u

Complete shut off below any ball float nipple in tank

- Question applies to ball floats (with or without a ball)
- If you can't get a cap off to verify, you should <u>FAIL</u> the DT.
- Why?
 - You can't confirm this question.
 - MDEQ will pursue enforcement against you if a nipple & drop tube is present & you didn't document it.
- Should caps be removed every year to verify? Yes.
- If both BF nipple & DT are present, you can use pg.
 2 pass the DT. (will cover shortly how)

**We don't expect anyone to excavate down to tank top to verify that the vent stub doesn't have a BF in it.

**If you don't see a ball float in riser pipes <u>or</u> don't have a riser pipe where one could be located at, mark this question "<u>yes</u>".

	MISSISSIPF ANNU/	PI DEPAR AL OVERFI									LIT	1		
➤ Inst	spection of all overfill devices										Date	e of Insp	ection	
	the absence of a recognized		ire or manu	facturer's	s recom	mended	l practi	ce the "	MDEQ	Overfill				
	evice Inspection Procedure" m I new Overfill Prevention Devi		Ostober 5	2010	et he D	ree Tub	o Doui	an ar Ela		A1				
		Facility	October 5,	2010 110	ist be b									
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Physic	cal Address	Compa	Company											
						-								
City		County		State	MDEQ	Certificat	tion #				Expira	ation Date	*	
UST C	Dwner			MS	Inspec	tor's Sign	atura				Date			
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L		evice Manufactur ill Device Model	er					-						
		evice is New				Yes	No	Yes	No	Yes	No	Yes	No	
	Device in good condition (N		Yes	No	Yes	No	Yes	No	Yes	No				
		ble tank top fitting	-			Yes	No	Yes	No	Yes	No	Yes	No	
2	Tank does NOT have				d	Yes	No	Ves 🗌	No	Yes	No	Yes Yes	No	
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loat	Length of	f Ball Float Valve	(inches)											
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e e	Distance below top of	tank that ball floa	t valve is s	et (inche	s)									
	Indicate tank capac	city when flow res	triction occ	urs (%)										
	Complete shut off occur	rs below any ball	float nipple	e in the ta	ank	Yes	No	Yes	No	Yes	No	Yes	No	
	Assembly and al	ll gaskets/seals in	good cond	dition		Yes	No	Yes	No	Yes	No	Yes	No	
Drop Tube Device	Length of upper tub	be to the "Referen	nce Point" (inches)										
Dev	Length of Fill Riser pipe	e (Seating positio	n to tank to	p) (Inche	es)									
pe	Height of tank to	p manway (if appl	licable) (ind	ches)										
PL I	Distance below tank top w	here "Reference	Point" is lo	cated (In	ches)									
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-	Distance below tank top	where complete	shut off oc	curs (incl	nes)			<u> </u>				<u> </u>		
	Indicate tank capacity whe													
		dible and visible to				Yes	No	Yes	No	Yes	No	Yes	No	
Electronic Aarm	8 E Distance below top of tank that electronic alarm is set (inches)												-	
ectron	Indicate tank capacity when alarm occurs (%)							<u> </u>						
E		G Printout attache	,	10)		Yes	No	Yes	No	Yes	No	Yes	No	
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	ternative methods include: pro	ecision type ball fly					vatak	neight on	eater #	an 90%	tank es	apacity (or drop	
	be devices are set to complete											-passing (
	verfill devices installed prior to													
	vice. Alternative methods pg. Alternative Method must hav													

Length of upper tube to "Reference Point"?

- "Reference Point" is the point that you measure to on device.
- The 95% mark on device.
 - EBW Auto Limiter
 - Emco Wheaton A1100
 - Franklin Defender
- OPW
 - Reference Point is the upper seam.

Facility Name MDEQ Facility ID # Inspector's Name Physical Address Company City County State MDEQ Certification # Expiration Date UST Owner Inspection Results for the Year Date Date Inspection Results for the Year Inspector's Signature Date Tank ID (product stored) Tank Volume (galions) Tank Volume (galions) Tank Volume (galions) Tank Diameter (inches) Overfill Device Model Ves No Yes No		I new Overfill Prevention De UST	Facility									ectio	n
City County State MDEO Certification # Expiration Date UST Owner Inspection Results for the Year	Facility		. aonty	MDEQ Fac	ility ID #	Inspect			iii conta	lucui	ig niop	COLIO	
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Alternative Methods > Alternative methods include: precision type ball float valves that are set to restrict flow at a height greater than 90% tank capacity of													
> Alternative methods include: precision type ball float valves that are set to restrict flow at a height greater than 90% tank capacity of													
	> ∆H	ternative methods include: a	precision type hall fl					vatak	eight gre	ater th	an 90%	tank es	anacity or
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	tut	be devices are set to comple	etely shut off flow at	a height gre	eater thar	n 95% ta	ank cap	acity.					

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

"Reference Point" Examples



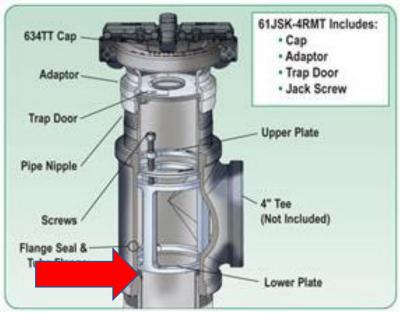






Length of fill riser pipe (Seating Position to tank top)?

- Seating position is:
 - Typically top of fill pipe.
- Depending on construction it may not be.
- Wherever the upper tube sits is the "Seating Position". May be lower in fill pipe. (Jack Screw Kit)



	new Overfill Prevention De	Facility				_		Conductin		ectio	n	
Facilit	y Name	rucinty	MDEQ Faci	ility ID #	Inspec	tor's Name		conductin	ig insp	ectio		
Physic	al Address				Compa	any						
Dity		County		State	MDEQ	Certification #		Expiration Date				
IST	Owner			MS	Increasing Provide Structure							
					inspec	Inspector's Signature Date						
		Inspection Rest	ults for th	ne Year								
	Tank	ID (product stored)					1					_
	Tank	Volume (gallons)										
	Tank	Diameter (inches)										
		fill device present				Yes No		Yes No	Yes	No	Yes 🗌	N
		Device Manufactur	er									
		rfill Device Model										
		Device is New				Yes No		Yes No	Yes	No	Yes	
	Device in good condition		· · · · · · · · · · · · · · · · · · ·	ocedure)		Yes No		Yes No	Yes	No	Yes	
	All access Tank does NOT hav	sible tank top fitting	-	o inotollo	d	Yes No		Yes No	Yes	No	Yes	
alve	u	Yes No	_	Yes No	Yes Yes	No No	Yes Yes					
Standard drop tubes are installed & in good condition Length of Ball Float Valve (inches) Height of tank top manuary (if applicable) (inches)							-					<u> </u>
윤			+									
Ball	Height of tank t Distance below top o	s)		+								
	Indicate tank capa			+								
	Complete shut off occ	urs below any ball	float nipple	in the ta	ink	Yes No		Yes No	Yes	No	Yes	N
	Assembly and	all gaskets/seals in	good cond	lition		Yes No		Yes No	Yes	No	Yes	N
8	Length of upper to	ube to the "Referen	ice Point" (i	inches)								
	Length of Fill Riser pi	pe (Seating position	n to tank to	p) (Inche	es)							
Ë/		op manway (if appl	~ ~ ~									
Drop	Distance below tank top						_					
5	Distance between Ref						-					
	Distance below tank to						-					
	Indicate tank capacity where Alarm is both as	udible and visible to			is (76)	Yes No	+	Yes No	Yes	No	Yes	
Ê E	Distance below top of tar						-					
Electronic Aarm		capacity when alar	,				-					
۳.		TG Printout attache	,			Yes No		Yes No	Yes	No	Yes	
	Inspectio	n result (Pass	/Fail)									_
Com	ments:	,										
				ative								
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.												
> O	verfill devices installed prior	to 10/5/2018 may u	use alternati	ive meth	ods but	must complet						
de	vice. Alternative methods p	g. 2 must be reevalu	ated every	3 years a	after init	ial inspection	usin	g an Alternat	tive Meth	nod. An	y device	e usin
	Alternative Method must has using Alternative Method										be allow	wea t

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Annual Overfill Prevention Device Inspection Height of Tank Top Manway?

- Typically you will never see this.
- If DT is installed in one of these risers you must measure height of tank top manway.



-	Il new Overfill Prevention De	Facility	October 5,	2016 114	St De D						ation	-	h
Facilit	ity Name	Facility	MDEQ Fac	cility ID #	Inspect	tor's Nam		n cona	lucui	ng Inspe	cuor	1	
Physi	ical Address				Compa	2014							_
r nyan	cal Aburess				Compa	li i y							
City		County		State MS	MDEQ	Certifica	tion #				Expira	tion Date	
UST	Owner				Inspector's Signature Date								
		Inspection Res	ults for t	he Year	<u> </u>								
		ID (product stored)		10.000				1					
		Volume (gallons)											
		Diameter (inches)									_		
		rfill device present	,			Yes	No	Yes	No	Yes	No	Yes	Г
		Device Manufactur							<u> </u>				Ē
	Over	rfill Device Model											
	[Device is New				Yes	No	Yes	No	Yes 🗌	No	Yes	Ē
	Device in good condition ((Note Criteria in In	spection Pr	rocedure)	,	Yes	No	Yes	No	Yes [No	Yes	Ē
	All access	sible tank top fitting	gs are tight			Yes	No	Yes	No	Yes	No	Yes	Ē
8	Tank does NOT have	e a suction or tank	syphon lin	e installe	.d	Yes	No	Yes	No	Yes 🗌	No	Yes	Ē
Float Valve	Standard drop tu/	bes are installed &	in good co	ondition		Yes	No	Yes	No	Yes 🗌	No	Yes	C
oat	Length /	of Ball Float Valve	(inches)										
	Height of tank t	top manway (if app	licable) (inc	ches)									
Ball	Distance below top of	of tank that ball floa	it valve is s	et (inche	s)								
		acity when flow res											
	Complete shut off occ				ink	Yes		Yes	No	Yes 🗌	No	Yes	
	Assembly and r	all gaskets/seals in	i good cond	dition		Yes	No	Yes	No	Yes 🗌	No	Yes	
levice		ube to the "Referen											
4	Length of Fill Riser pip				es)								
		top manway (if app											
8	Distance below tank top												
Dron	Distance between Refe												
	Distance below tank top												
	Indicate tank capacity wh				'S (%)								
.e		udible and visible to				Yes	No	Yes	No	Yes [No	Yes	
Electronic Aarm	Distance below top of tan			<u> </u>									
A Elec	-	Capacity when alar		(%)				- Nee				- Mar	-
			'	Yes	No	res	No	Yes	No	Yes	L		
Con		on result (Pass	/Fally									L	_
Com	nments:		Altor	native I	llathr								
tul ≻ O\ de	Iternative methods include: p ube devices are set to comple overfill devices installed prior evice. Alternative methods pg n Alternative Method must ha	etely shut off flow at r to 10/5/2018 may u ig. 2 must be reevalu	loat valves ti t a height gre use alternati luated every	that are se reater than tive methor / 3 years a	et to res n 95% ta ods but after initi	strict flov ank capa must co ial inspe	acity. omplete ection u	e pg. 2 of Ising an A	f this fo Alternat	orm in full tive Metho	to "Pa d. Anj	ass" an o y device	ov e u

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Distance Below tank top where "Reference Point" is located?

• Form is setup as a worksheet:

36"	44
<u>- 30″</u>	- 30″
6″	<u>- 4.5″</u>
	9.5″

**This may or may not be point of complete shut off. For OPW 61 & 71 SOs:

This number must be 6.5" or greater.

	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Premium	Hwy Diesel	Off Road Diese
	Tank Volume (gallons)				
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	EBW	Emco	OPW	OPW
	Overfill Device Model	Auto Limiter	A1100	61 SO	71 SO
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
e	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
oat	Length of Ball Float Valve (inches)				
Ē	Height of tank top manway (if applicable) (inches)				
Ba	Distance below top of tank that ball float valve is set (inches)				
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
Device	Length of upper tube to the "Reference Point" (inches)	36	44	36.5	39.5
De	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
	Height of tank top manway (if applicable) (inches)	0	4.5	0	0
	Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
~	Distance between Reference Point and Complete Shut off Point				
1	Distance below tank top where complete shut off occurs (inches)				
	Indicate tank capacity when complete (2nd Stage) shut off occurs (%)				
o	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
Electronic	Distance below top of tank that electronic alarm is set (inches)				
lectron Alarm	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)				

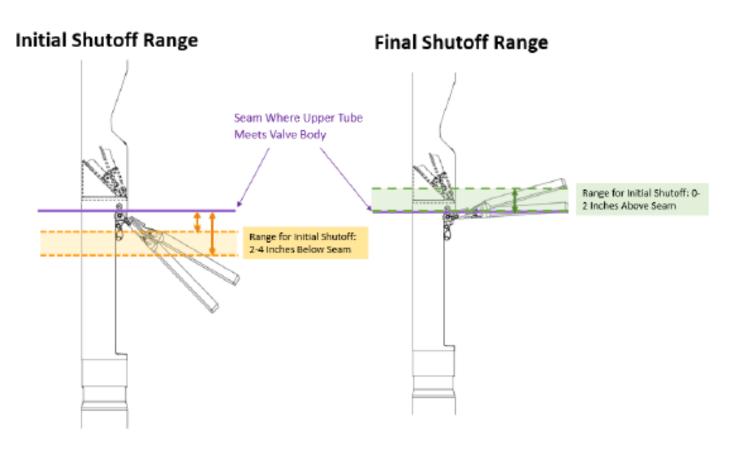
Distance between Reference point and Complete Shut Off Point?

- Overfill Drop tubes marked by 95%.
 - The mark is both the Reference Point & Complete Shut Off Point.
 - Difference is 0 inches.
- Overfill Drop tubes not marked? (OPW)
 - The Reference point is the seam.
 - The Complete Shut Off Point is 1.5" above that.
 - The difference is 1.5 inches.

		Inspection Results for the Year				
		Tank ID (product stored)	Regular	Premium	Hwy Diesel	Off Road Diesel
		Tank Volume (gallons)				
		Tank Diameter (inches)	96	96	96	96
		Overfill device present	Yes No	Yes No	Yes No	Yes No
		Overfill Device Manufacturer	EBW	Emco	OPW	OPW
		Overfill Device Model	Auto Limiter	A1100	61 SO	71 SO
		Device is New	Yes No	Yes No	Yes No	res No
		Device in good condition (Note Criteria in Inspection Procedure)	Yes No	Yes No	Yes No	Yes No
		All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
	é	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
	Val	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
	oat	Length of Ball Float Valve (inches)				
	Ball Float Valve	Height of tank top manway (if applicable) (inches)				
	Ba	Distance below top of tank that ball float valve is set (inches)				
		Indicate tank capacity when flow restriction occurs (%)				
		Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
		Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
	Device	Length of upper tube to the "Reference Point" (inches)	36	44	36.5	39.5
t	De	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
	T be	Height of tank top manway (if applicable) (inches)	0	4.5	0	0
		Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
		Distance between Reference Point and Complete Shut off Point	0	0	1.5	1.5
		Distance below tank top where complete shut off occurs (inches)				
		Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)				
	nic	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
	5 -					

**If 95% not marked on device see manufacturer's instructions.

OPW 61 & 71 SO Complete Shut Off Point?



- OPW recently published modified instructions to indicate where complete shut off occurs.
- Instructions indicate that complete shut off occurs 1.5 inches above the seam.

****Note:** Diagram provided by OPW is mislabeled but it shows the 2 stages of the device.

Appendix C

HOW TO LOCATE THE POSITION OF THE 71SO FOR COMPLETE SHUT-OFF AT A GIVEN TANK CAPACITY

Note: This Appendix only applies when AHJ requirements call for complete shut-off at a given tank capacity. See page 4 for standard measurements.

The length of the upper tube and the placement of the 71SO valve body determine the shut-off point. The sample calculation below will provide for complete shut-off at 95%. In all cases, the upper tube length must be a minimum of 6-1/2" plus the length of the riser pipe. All length measurements are in inches.

INSTRUCTIONS

- Find the tank capacity (in gallons) from the tank calibration chart provided by the tank manufacturer.
- Calculate 95% of capacity.
- Locate the 95% volume number on the tank calibration chart.
- Find the dipstick number (X) which corresponds to the 95% tank volume. And, find the dipstick number (Y) which corresponds to the 100% volume.
- Subtract the dipstick number (X) from the tank diameter (Y) to find the upper tube reference number (Z).
 (Y) (X) = (Z)
- Add 1.5" to (Z) to find the upper tube depth E.
 (Z) + 1.5" = E
- Is E less than 6-1/2"?
- NO Upper tube length is E plus the distance from the top of the Face Seal Adaptor installed on the riser pipe to the inside, top lip of the storage tank (A). Upper Tube Length = E + (A)

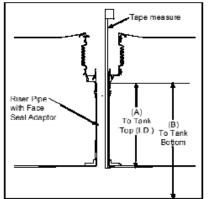
For testable models only, ending in "T": Upper Tube Length = E + (A) – 1-1/2"

YES Upper tube length is 6-1/2" plus the riser pipe measurement (A). Upper Tube Length = 6-1/2" + (A)

> For testable models only, ending in "T": Upper Tube Length = 6-1/2" + (A) – 1-1/2"

NOTE: You must find the actual tank capacity number that correlates to the 6-1/2" + (A) depth for the station records. This number may also be used or the purposes of calibrating an electronic tank level system. For an Owens-Corning Model G-3 Fiberglass® Tank Calibration Chart: Tank Capacity - 10,000 gal., nominal 9,403 gal.

NOTE: Use actual capacity only



- 95% of actual tank capacity = 0.95 x 9403 gal. = 8933 gal.
- The closest number which is less than 8933 gal. Is 8910 gal. Choosing the closest number less than 95% of actual capacity ensures that complete shutoff will occur when the tank is no more than 95% full.
- The calibration chart reading of 8910 gal. corresponds to a dipstick measurement of 82".
- Dipstick number (X) = 82" Tank diameter (Y) = 92" (Y) - (X) = (Z) (92 "- 82" = 10") (Z) = 10"
- 6. (Z) + 1.5" = E (10" + 1.5" = 11.5") E = 11.5"
- 7. Is 11.5" less than 6-1/2"?
- NO Measure the distance from the top of the FSA-400 Face Seal Adaptor installed on the riser pipe to the inside, top lip of the storage tank and obtain measurement (A).

Upper tube length = E + (A)

For testable models only, ending in "T": Upper Tube Length = E + (A) – 1-1/2"

Appendix C (continued)

71SO Overfill Valve in Tank Complete Shut Off Level Worksheet

<u>Important:</u> 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.



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) =

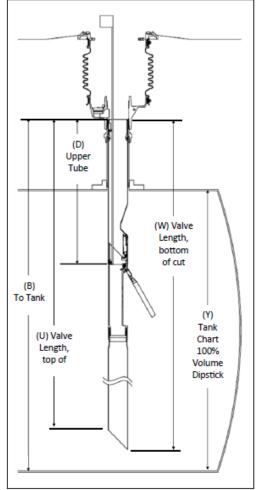
 To determine complete shut-off percentage: Subtract upper tube length (D) from distance to tank bottom (B)
 (X) = (B) - (D) + 1.5" =

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.

EXAMPLE

Distance below tank top where complete shut off occurs?

- This is the number to use to determine 95%
- OPW Examples:

6.5″	9.5″
<u>- 1.5″</u>	- 1.5"
5 <i>"</i>	8″

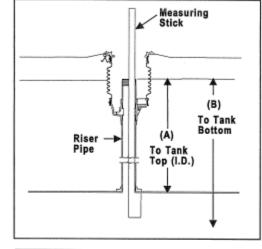
- Both OPWs FAIL
 - Can they be passed?
 - Only by using Alternative rule. Pg. 2

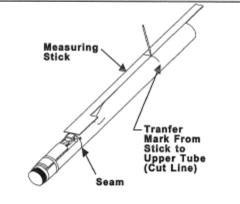
	Inspection Results for the Year			•	
	Tank ID (product stored)	Regular	Premium	Hwy Diesel	Off Road Diese
	Tank Volume (gallons)				
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes 🔲 No	Yes No	Yes No
	Overfill Device Manufacturer	EBW	Emco	OPW	OPW
	Overfill Device Model	Auto Limiter	A1100	61 SO	71 SO
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
e	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
oat	Length of Ball Float Valve (inches)				
Ē	Height of tank top manway (if applicable) (inches)				
Ba	Distance below top of tank that ball float valve is set (inches)				
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
lice	Length of upper tube to the "Reference Point" (inches)	36	44	36.5	39.5
Sp Tube Device	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
per	Height of tank top manway (if applicable) (inches)	0	4.5	0	0
p T	Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
	Distance between Reference Point and Complete Shut off Point	0	0	1.5	1.5
	Distance below tank top where complete shut off occurs (inches)	6	9.5	5	8
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)	98%	95%	98%	96%
U	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)				
lect Ala	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	Fail	PASS	Fail	Fail

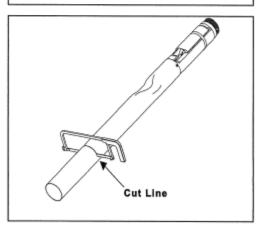
How common is it that a drop tube is not set at 95%?

- You should expect it at every site.
- Appendix C wasn't published in OPW's instructions until June 2018.
- With OPW's clarification, the majority out there are not set at 95%.
 - Many have seam set at 6.5" below tank top.
 - Used the paper guide to cut upper tube.
 - Many have seam set at 9.5" below tank top.
 - Was not made aware of where complete shut off occurs at.
- If not at 95%, it fails unless you use pg. 2 and prove Alternative rule.

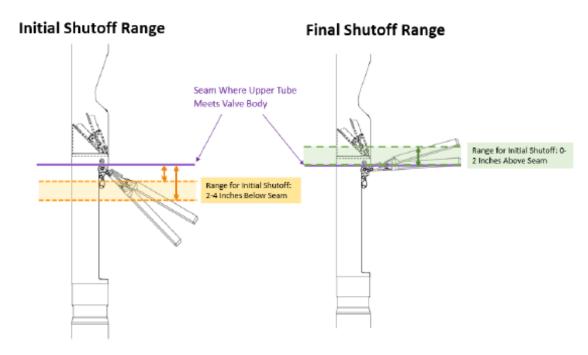
**Note this issue is not limited to OPW. Many dual float valves are also set at 5.5" below tank top, not at 95%.







Why all the confusion?



- Federal & State regulations allowed for use of alternative rule since 1988.
- Alternative rule for drop tubes being all tank top fittings not being wetted.
- Manufacturers "previous" instructions may have capitalized on this rule by making instructions to meet alternative rule instead of informing where 95% is.
- Following previous instructions, yes your device likely will shut off at 98% but what is NOT taken into account here?
 - Tilt & Deflection

MDEQ Alternative Method pg. 2

- MDEQ removed "Alternative Method" from regulations 10/5/18.
- All new drop tube devices installed after 10/5/18 required to be installed at 95% in MS.
 - Pg. 2 is an allowance for existing devices
 - Form must be completed by 10/5/2020 for each device.
 - Copy should be sent to me by email to file.
- Its not as bad as it seems.....
 - Pg. 2 only has to be confirmed every 3 years.
- What is MDEQ going to want to see when they inspect?
 - Last Annual OF inspection (within past year).
 - Last OF inspection where pg. 2 was evaluated (up to 3 years old)

	Alternative Method Evaluation							
Alternative me	thod cannot be used if:			MDEQ Facility				
a.) Tank Volum	e is less than 4,000 gallons or Overfill Device w	as installed a	fter 10/5/2018.	ID Number:				
b.) If overall tan	k tilt cannot be determined.			Date of				
c.) If any of the	applicable "Alternative Method Results" are ma	rked as "NO".		Inspection:				
	Reference Diagram & Equations (Pro							
	R = L	ength betwe	en measuring po	pints (inches)				
		R						
	X Low end of tank. Highest product level.	۲ I	High end of ta Lowest product i					
	L = Total tar	nk Length (in	iches)	.1				
	Overall Tank Tilt = (Difference							
	Tank Deflection = Tank Diameter from t							
	nches) at low end when device is at high end = Di a) at low end when device is at middle = Distance							
		etermination						
Method of	Product level gauged at two separate ta	nk openings	Elevation of ea	ach end of tank surve	eyed with a level			
Determining Ta	nk Tilt 🔲 Measured with a tank inclinometer		Other (specify)):				
	Tank ID (product stored)							
Tank o	apacity greater than 4,000 gallons?	Yes N	lo 🚺 Yes 🗌 No	Yes No	Yes No			
	Tank Tilt can be determined	Yes N	lo 📘 Yes 🗌 No	Yes No	Yes No			
	Total Tank Length (inches)							
Lengt	h between measuring points (R) (Inches)							
Pi	roduct level measured at "X" (inches)							
Pi	roduct level measured at "Y" (inches)							
P	roduct level measured at "Z" (inches)							
Diffe	erence between product levels (inches)							
	Overall Tank Tilt (inches)							
	Tank Deflectio	n Determina	tion					
Tank di	ameter as it appears on tank chart (inches)							
	Measured Tank Diameter (Inches)							
	Tank Deflection (Inches)							
	Device Position an	d Ullage Cal	culation					
Туре	of Device: (Ball Float or Drop Tube)	🔲 B.F. 🗌 D	.T 🔲 B.F. 🗌 D.1	Г 🔲 В.F. 🗌 D.T	B.F. D.T			
Overfill	Low End ("X" position)							
Device is	Center ("Y" position)							
Installed at	High End ("Z" position)							
Distance of De	vice 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)							
Man Kalala di tan ki	Alternative Method Res	uits (mark a	li that apply)	1	1			
	tops <u>OR</u> the overfill devices installed in them el with each other	Yes 🗌 N	No Yes No	Yes No	Yes No			
before tank top fi	-	Yes 🗆 N	No Yes No	o □ _{Yes} □ _{No}	□ _{Yes} □ _{No}			
	is "2 Stage" device and complete shut off occurs ttings wetted. (Ullage of at least 1 inch required.)	Yes 🗌 N	No Yes No	Yes No	Yes No			
Inspection	for Alternative Method (Pass / Fail)							
PRO	DUCED BY THE MISSISSIPPI DEPT. OF ENVIRONMENT/ P.O. BOX 2261 JACKSON, MS 39225 PHONE (601)							
	P.O. BOX 2201 JACKSON, MS 39225 PHONE (601)	BOI-OT/T FA	x (001) 901-0093 ht	do name de la companya de la company	4/2018			

Lets be clear....

- On pg. 1 you have a choice.
- If device is not at 95% you can
 - Fail it
 - Attempt to use pg. 2 to Pass it
- It is your choice.
- If tank has both a Ball Float and a drop tube you have the same choice.

Tank Volume (gallons) Tank Diameter (inches) 96 96 96 96 96 96 Overfill device present Yes No		Inspection Results for the Year			· · · · · · · · · · · · · · · · · · ·	
Tank Diameter (inches) 96 96 96 96 96 Overfill device present Yes No Yes		Tank ID (product stored)	Regular	Premium	Hwy Diesel	Off Road Diesel
Overfill device present Yes No Yes		Tank Volume (gallons)				
Overfill Device Manufacturer EBW Emco OPW OPW Overfill Device Model Auto Limiter A1100 61 SO 71 SO Device in good condition (Note Criteria in Inspection Procedure) Yes No		Tank Diameter (inches)	96	96	96	96
Overfill Device Model Auto Limiter A1100 61 SO 71 SO Device is New Yes No		Overfill device present	Yes No	Yes No	Yes No	Yes No
Device is New Yes No Yes No<		Overfill Device Manufacturer	EBW	Emco	OPW	OPW
Device in good condition (Note Criteria in Inspection Procedure) Yes No Yes		Overfill Device Model	Auto Limiter	A1100	61 SO	71 SO
All accessible tank top fittings are tight Tank does NOT have a suction or tank syphon line installed Standard drop tubes are installed & in good condition Standard drop tubes are installed & in good condition Length of Ball Float Valve (inches) Height of tank top manway (if applicable) (inches) Indicate tank capacity when flow restriction occurs (%) Complete shut off occurs below any ball float nipple in the tank Assembly and all gaskets/seals in good condition Yes No Yes No Length of puper tube to the "Reference Point" (inches) Bitance below tank top manway (if applicable) (inches) Length of Fill Riser pipe (Seating position to tank top) (Inches) Distance below tank top where "Reference Point" is located (Inches) Distance below tank top where complete shut off occurs (%) Standard top where complete shut off occurs (%) Distance below tank top where complete shut off occurs (%) Standard tank capacity when complete (2 nd Stage) shut off occurs (%) Alarm is both audible and visible to delivery driver Marm is both audible and visible to delivery driver ATG Printout attached Yes No Yes N		Device is New	Yes No	Yes No	Yes No	Yes No
Tank does NOT have a suction or tank syphon line installed Yes No Yes <t< td=""><td></td><td>Device in good condition (Note Criteria in Inspection Procedure)</td><td>Yes No</td><td>Yes No</td><td>Yes No</td><td>Yes No</td></t<>		Device in good condition (Note Criteria in Inspection Procedure)	Yes No	Yes No	Yes No	Yes No
Standard drop tubes are installed & in good condition Yes No Yes No<		All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
Indicate below top of talm that ball hoar value is set (indicis) Indicate tank capacity when flow restriction occurs (%) Complete shut off occurs below any ball float nipple in the tank Yes No Yes N	Ve	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
Indicate below top of talm that ball hoar value is set (indicis) Indicate tank capacity when flow restriction occurs (%) Complete shut off occurs below any ball float nipple in the tank Yes No Yes N	Val	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
Indicate below top of talm that ball hoar value is set (indicis) Indicate tank capacity when flow restriction occurs (%) Complete shut off occurs below any ball float nipple in the tank Yes No Yes N	oat	Length of Ball Float Valve (inches)				
Indicate below top of talm that ball hoar value is set (indicis) Indicate tank capacity when flow restriction occurs (%) Complete shut off occurs below any ball float nipple in the tank Yes No Yes N	ΠF	Height of tank top manway (if applicable) (inches)				
Source Complete shut off occurs below any ball float nipple in the tank Yes No Yes No <td< td=""><td>Ba</td><td>Distance below top of tank that ball float valve is set (inches)</td><td></td><td></td><td></td><td></td></td<>	Ba	Distance below top of tank that ball float valve is set (inches)				
Assembly and all gaskets/seals in good condition Yes No		Indicate tank capacity when flow restriction occurs (%)				
Open of Upper tube to the "Reference Point" (inches) 36 44 36.5 39.5 Length of upper tube to the "Reference Point" (inches) 30 30 30 30 30 Length of Fill Riser pipe (Seating position to tank top) (Inches) 30 30 30 30 30 30 Height of tank top manway (if applicable) (inches) 0 4.5 0 0 0 Distance below tank top where "Reference Point" is located (Inches) 6 9.5 6.5 9.5 Distance below tank top where complete Shut off Point 0 0 1.5 1.5 Distance below tank top where complete shut off occurs (inches) 6 9.5 5 8 Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Obistance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Yes No Yes No Indicate tank capacity when alarm occurs (%) ATG Printout attached Yes No Yes No Yes No		Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
Distance below tank top where complete shut off occurs (inches) 6 9.5 5 8 Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Yes No Yes No Yes No Yes No Yes No		Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
Distance below tank top where complete shut off occurs (inches) 6 9.5 5 8 Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Yes No Yes No Yes No Yes No Yes No	/ice	Length of upper tube to the "Reference Point" (inches)	36	44	36.5	39.5
Distance below tank top where complete shut off occurs (inches) 6 9.5 5 8 Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Yes No Yes No Yes No Yes No Yes No	De	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
Distance below tank top where complete shut off occurs (inches) 6 9.5 5 8 Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Yes No Yes No Yes No Yes No Yes No	per	Height of tank top manway (if applicable) (inches)	0	4.5	0	0
Distance below tank top where complete shut off occurs (inches) 6 9.5 5 8 Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Indicate tank capacity when alarm occurs (%) Yes No Yes No Yes No Yes No Yes No	p T(Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
Indicate tank capacity when complete (2 nd Stage) shut off occurs (%) 98% 95% 98% 96% Alarm is both audible and visible to delivery driver Yes No	Dro	Distance between Reference Point and Complete Shut off Point	0	0	1.5	1.5
Alarm is both audible and visible to delivery driver Yes No Yes No Yes No Yes No Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) Ves No Yes No Yes No ATG Printout attached Yes No Yes No Yes No Yes No Yes No	_	Distance below tank top where complete shut off occurs (inches)	6	9.5	5	8
Distance below top of tank that electronic alarm is set (inches) Indicate tank capacity when alarm occurs (%) ATG Printout attached Yes No Yes No		Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)	98%	95%	98%	96%
A I G Printout attached Yes No Yes No Yes No Yes No	o	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
A I G Printout attached Yes No Yes No Yes No Yes No	in ni	Distance below top of tank that electronic alarm is set (inches)				
A I G Printout attached Yes No Yes No Yes No Yes No	lect Ala	Indicate tank capacity when alarm occurs (%)				
Inspection result (Pass/Fail) Fail PASS Fail Fail	ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
		Inspection result (Pass/Fail)	Fail	PASS	Fail	Fail

- MDEQ Alternative Method pg. 2
 - Pg. 2 is not always 100% accurate.
 - It is a VERY good conservative estimate.
 - Until something better comes out this is what it is. A way to document Alternative Method
- In general:
 - It takes a lot of tilt or deflection to NOT pass a device. (5" or more)
 - Most drop tube devices do pass.
- Now lets simplify this...

	Alternative Me	thod Evalu	Jati	on			
Alternative me	thod cannot be used if:				MDEQ Facility		
a.) Tank Volume	e is less than 4,000 gallons or Overfill Device w	as installed a	fter	10/5/2018.	ID Number:		
b.) If overall tan	k tilt cannot be determined.			Γ	Date of		
c.) If any of the a	applicable "Alternative Method Results" are man	ked as "NO".			Inspection:		
	Reference Diagram & Equations (Proc						
	R = L	ength betwe	en	measuring poi	nts (inches)		
		• •					
]			[]		
		-	_				
X Low end of tank. Highest product level. V High end of tank. Lowest product level							
	L = Total tar	nk Length (in	nche	98)			
	Overall Tank Tilt = (Difference				L/R)		
	Tank Deflection = Tank Diameter from ta	ank chart (-)	The	measured tar	nk diameter		
	ches) at low end when device is at high end = Di						
Ullade linches) at low end when device is at middle = Distance Tank Tilt D	etermination		Middle of tank i	-i Hair of Tank Ti	(1-) Deflection	
Method of				Elevation of and	h end of tank surv	aved with a lave	
Determining Tan		nk openings	ī	Other (specify):	ar end or tank surv	eyed with a leve	
	Tank ID (product stored)		_	other (specify).	1		
Tank c	apacity greater than 4,000 gallons?	Yes N	lo	Yes No	Yes No	Yes No	
	Tank Tilt can be determined	Yes N		Yes No	Yes No	Yes No	
	Total Tank Length (inches)		0				
	- · · ·		_				
	between measuring points (R) (Inches)						
	oduct level measured at "X" (inches)						
	oduct level measured at "Y" (inches)						
	oduct level measured at "Z" (inches)						
Diffe	rence between product levels (inches)						
	Overall Tank Tilt (inches)						
	Tank Deflection	n Determina	tion	l			
Tank dia	meter as it appears on tank chart (inches)						
	Measured Tank Diameter (Inches)						
	Tank Deflection (Inches)						
	Device Position an	d Ullage Cal	cula	tion			
Туре о	of Device: (Ball Float or Drop Tube)	B.F. D	.т	B.F. D.T	B.F. D.T	B.F. D.	
Overfill	Low End ("X" position)						
Device is	Center ("Y" position)						
Installed at	High End ("Z" position)						
Distance of Dev	vice 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 Res	ults (mark a	ll th	at apply)			
Manifolded tank to appear to be leve	ops <u>OR</u> the overfill devices installed in them I with each other	Yes 🔲 M	No	Yes No	Yes No	Yes N	
Ball float is "precis before tank top fit	sion" type and initial restriction occurs 30 min tings wetted.	Yes I	No	Yes No	□ _{Yes} □ _{No}	□ _{Yes} □ _N	
	is "2 Stage" device and complete shut off occurs						
before tank top fit	tings wetted. (Ullage of at least 1 inch required.) for Alternative Method (Pass / Fail)	Yes I	NO	Yes No	Yes No	Yes N	
	, , , , , , , , , , , , , , , , , , , ,						
PROD	UCED BY THE MISSISSIPPI DEPT. OF ENVIRONMENTA P.O. BOX 2261 JACKSON, MS 39225 PHONE (601)				CONTROL, UST BR ://www.mdeq.ms.gov		

MDEQ Alternative Method pg. 2

- First, you do need an "accurate" tank chart.
- If:
 - Tank capacity < or = 4,000 gallons
 - Tank tilt can't be determined.
 - The Device automatically FAILS. Don't go any further on pg 2 wasting your time
- Method of determining tank tilt:
 - Fuel level gauged at 2 different openings (ideal)
 - Inclinometer For single opening.
 - Be prepared to be asked about your Inclinometer (we haven't found one on the market)
 - Elevation of tank ends surveyed with a level. (May not be appropriate to use if tank is deflected)
 - No it doesn't require a surveyor
 - Gently probe down to tank top at both ends.
 - Rods should be the same length.
 - Measure difference in elevation between the rods

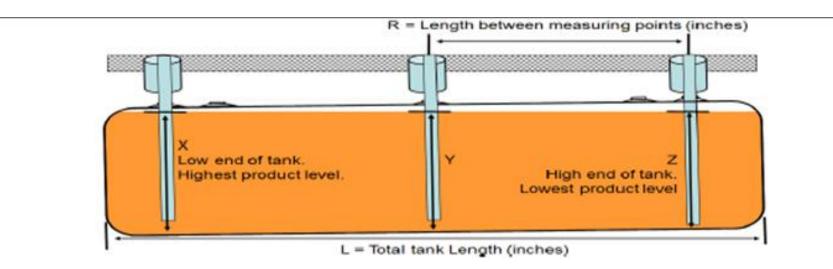
		Alternative Met	hod Eval	uat	ion		
_ [Alternative me	thod cannot be used if:				MDEQ Facility	
	a.) Tank Volum	e is less than 4,000 gallons or Overfill Device wa	as installed a	after	10/5/2018.	ID Number:	
	b.) If overall tan	k tilt cannot be determined.	Date of				
	c.) If any of the	applicable "Alternative Method Results" are mar	ked as "NO"			Inspection:	
		Reference Diagram & Equations (Prod					
		R = Le	ength betwe	een	measuring po	ints (inches)	
			- P				
			<u> </u>				
		X Low end of tank.	~			-	
		Highest product level.	, r	1	High end of ta	nk.	
					est product le		
		L U U					
		· · · · · · · · · · · · · · · · · · ·	In 1 mm - 10 - 11				
		Overall Tank Tilt = (Difference				L/R)	
		Tank Deflection = Tank Diameter from ta					
	Ullage (Ir	nches) at low end when device is at high end = Dis					eflection
		at low end when device is at middle = Distance b	below tank to	op at			
		Tank Tilt De	etermination	n			
	Method of		nk openings			ch end of tank surv	eyed with a level
	Determining Ta				Other (specify):		
		Tank ID (product stored)					
	Tank c	apacity greater than 4,000 gallons?	Yes I	No	Yes No	Yes No	Yes No
, [Tank Tilt can be determined	Yes I	No	Yes No	Yes No	Yes No
3.		Total Tank Length (inches)					
	Lengt	h between measuring points (R) (Inches)					
[Pr	roduct level measured at "X" (inches)					
[Pr	roduct level measured at "Y" (inches)					
	Pi	roduct level measured at "Z" (inches)					
[Diffe	erence between product levels (inches)					
Ì		Overall Tank Tilt (inches)					
Ì		Tank Deflection	n Determina	tion	1		
	Tank dia	ameter as it appears on tank chart (inches)					
ľ		Measured Tank Diameter (Inches)					
ł		Tank Deflection (Inches)					
		Device Position and	d Ullage Ca	lcul	ation		
	Type	of Device: (Ball Float or Drop Tube)	B.F. 0		B.F. D.T	B.F. D.T	B.F. D.T
ł	Overfill	Low End ("X" position)					
	Device is	Center ("Y" position)					
	Installed at	High End ("Z" position)					
ł	Distance of De	vice below tank top at low end of tank (inches)					
ł		Ullage (gallons):					
	(based on depth	of device below tank top at the low end of the tank)					
		Alternative Method Res		all th	nat apply)		
		tops <u>OR</u> the overfill devices installed in them el with each other	Yes	No	Yes 🗌 No	Yes No	Yes No
	Ball float is "preci before tank top fi	ision" type and initial restriction occurs 30 min ttings wetted.	Yes	No	Yes No	Ves No	□ _{Yes} □ _{No}
Ì	Drop tube device	is "2 Stage" device and complete shut off occurs	Yes	Ne	Yes No	Yes No	Yes No
		ttings wetted. (Ullage of at least 1 inch required.)		140			
	Inspection	for Alternative Method (Pass / Fail)					
	PROD	DUCED BY THE MISSISSIPPI DEPT. OF ENVIRONMENTA					
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MDEQ Alternative Method pg. 2

- Total tank length (L)
 - Comes from tank chart. Not what you estimate
- Length between measuring points (R)
 - Depends on method used.
 - Fuel level gauged at 2 different openings
 - (R) is the length between your riser pipes.
 - Choose risers further away for better accuracy
 - Inclinometer
 - (R) doesn't apply, should be left blank.
 - MDEQ equation to calculate tilt does not work.
 - There should be an equation of some kind to determine overall tank tilt
 - Elevation of tank ends surveyed with a level.
 - (R) is the length between your probe rods

Alternative Method Evaluation									
Alternative metho	od cannot be used if:				MDEQ Facility				
a.) Tank Volume is	a.) Tank Volume is less than 4,000 gallons or Overfill Device was installed after 10/5/2018.								
b.) If overall tank ti	b.) If overall tank tilt cannot be determined. Date of								
c.) If any of the app	plicable "Alternative Method Results" are mai	rked as "NO	".		Inspection:				
	Reference Diagram & Equations (Product Gauged at two separate openings)								
	R = L	ength betw	een	measuring po	ints (inches)				
15		•							
8	-61	1			61				
		2		_					
	X Low end of tank. Highest product level.	Y	Low	High end of ta rest product le					
1	L = Total tar								
	Overall Tank Tilt = (Difference								
Illiana (Inch	Tank Deflection = Tank Diameter from ta es) at low end when device is at high end = Di					offection			
	t low end when device is at high end = Di t low end when device is at middle = Distance								
		eterminatio							
Method of	Product level gauged at two separate ta	ink openings		Elevation of eac	h end of tank surve	eyed with a level			
Determining Tank 1	Tilt Measured with a tank inclinometer			Other (specify):	_				
1	Fank ID (product stored)								
Tank cap	acity greater than 4,000 gallons?	Yes	No	Yes No	Yes No	Yes No			
Та	nk Tilt can be determined	Yes	No	Yes No	Yes No	Yes No			
	Total Tank Length (inches)								
Length be	etween measuring points (R) (Inches)								
Produ	uct level measured at "X" (inches)								
Produ	uct level measured at "Y" (inches)								
Produ	uct level measured at "Z" (inches)								
Differen	nce between product levels (inches)								
0	verall Tank Tilt (inches)								
	Tank Deflectio	n Determina	atior	1		1			
Tank diame	eter as it appears on tank chart (inches)								
Me	asured Tank Diameter (Inches)								
T	ank Deflection (Inches)								
	Device Position an	d Ullage Ca	lcul	ation					
Type of [Device: (Ball Float or Drop Tube)		D.T	B.F. D.T	B.F. D.T	B.F. D.T			
Overfill	Low End ("X" position)								
Device is	Center ("Y" position)								
Installed at	High End ("Z" position)								
Distance of Device	e below tank top at low end of tank (inches)								
	Ullage (gallons):								
(based on depth of d	device below tank top at the low end of the tank)								
	Alternative Method Res	ults (mark	all th	at apply)	1	1			
Manifolded tank tops appear to be level wi	5 <u>OR</u> the overfill devices installed in them ith each other	🗌 Yes 📃	No	Yes 🗌 No	Yes No	Yes 🗌 No			
	n" type and initial restriction occurs 30 min gs wetted.	Yes	No	Yes No	□ _{Yes} □ _{No}	□ _{Yes} □ _{No}			
before tank top fitting	2 Stage" device and complete shut off occurs	Yes 🗆	No	Yes No	Yes No	Yes No			
Drop tube device is	gs wetted. (Ullage of at least 1 inch required.)		110			LIYes LINO			
Drop tube device is before tank top fitting		L Yes L	110			LIYes LINO			
Drop tube device is before tank top fitting Inspection fo	gs wetted. (Ullage of at least 1 inch required.)								

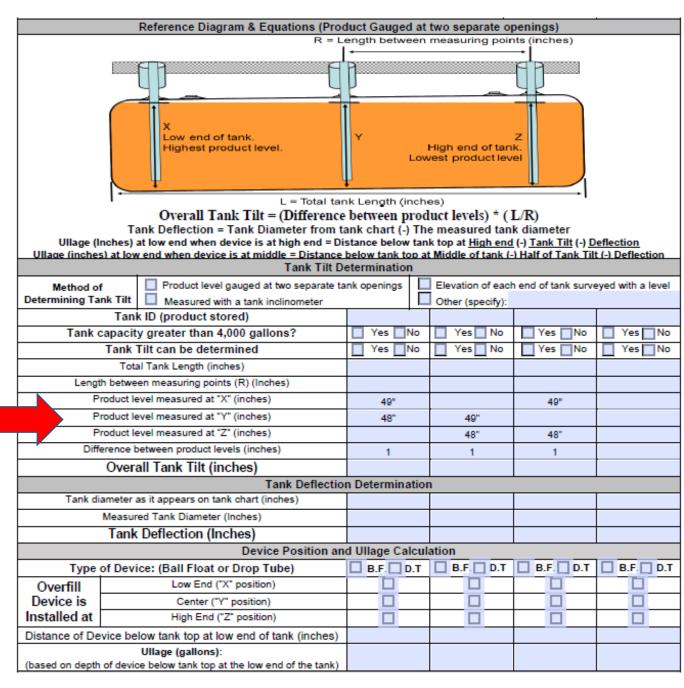
Comments:



- If you have a choice between riser pipes.
- Use riser pipes that create the largest (R) value.
 - Easier to see the difference in fuel levels.
 - Easier to determine low / high end.
 - More accurate.

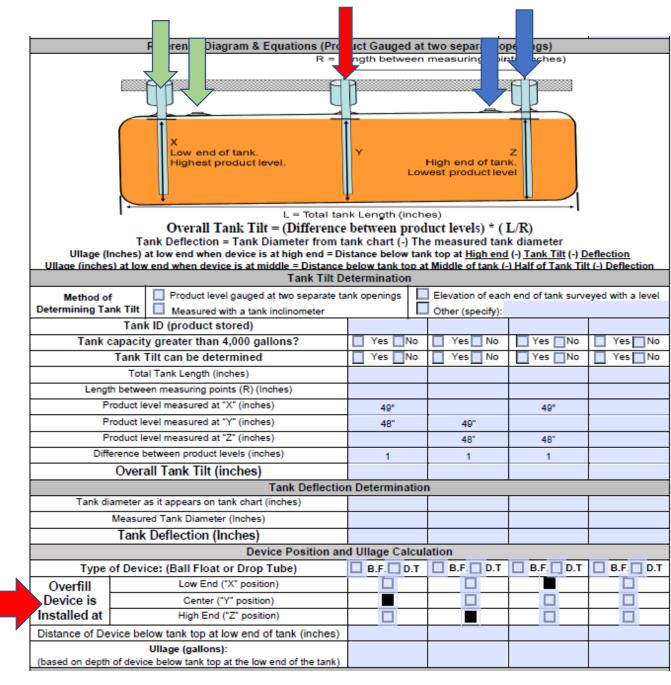
Low or High? What measurement goes where?

- You have to document where your measurements were taken. (unless using an inclinometer)
- If one of the measurements is taken close to the middle of the tank then it automatically is your (Y) location.
- Low or High? Use the diagram:
 - Fuel level gauged at 2 different openings:
 - X = low end of tank, has the highest fuel level
 - Z = high end of tank, has the lowest fuel level
 - Elevation of tank ends surveyed with a sight level:
 - X = low end of tank, rod lower in ground
 - Z = high end of tank, rod higher in ground
- What matters is:
 - The difference.
 - Where exactly is the device located? (High, low, middle)
- Ex. 48" & 49" = same difference 1"

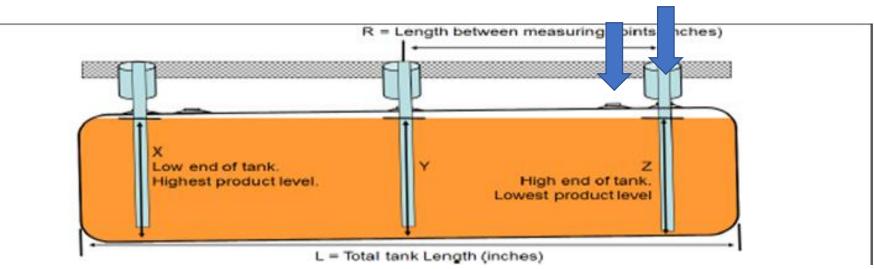


Now you should know where your device is located

- One of your measurements should be taken where the device is installed.
- If device is installed in the middle of the tank, it is at (Y) center
- If device is at high or low end.
 - Use Diagram to guide you. (Previous Slide)
 - If your device is installed in either of these bungs, it is High end.
 - If device is installed in either of these bungs, it is low end.



Comments:



If your only accessible riser pipes at one end of tank. (Example above)

• Your device is NOT at the middle (Y). It is high end.

Even though you document one of the fuel measurements as (Y).

	Device Position a	d Ullage Calcul	ation		
Туре	of Device: (Ball Float or Drop Tube)	B.F. D.T	B.F. D.T	B.F. D.T	B.F. D.T
Overfill	Low End (*X* position)				
Device is	Center ("Y" position)				
Installed at	High End ("Z" position)				
Distance of De	vice 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)				

Annual Overfill Prevention Device Inspection Overall Tank Tilt

- Critical values:
 - Total tank Length (L)
 - Length between measuring points (R)
- Same equation:

Overall Tilt = Difference
$$*(\frac{L}{R})$$

- Ex:
 - $1'' * (\frac{319}{159}) = 2$ inches overall tilt

•
$$1'' * \left(\frac{319}{279}\right) = 1.14$$
 inches overall tilt

		Reference Diagram & Equations (Pro-	duct Course	l at	two constate of	neninge)		
					measuring poir			
			·			→Ì ĺ		
		A MARINA A	P			F P		
		чү ч	μ		_	ЧР		
			+			1		
	(v						
		A Low end of tank.	Y			z		
		Highest product level.			High end of tan vest product lev			
	1-	L = Total tar						
		Overall Tank Tilt = (Difference						
Illians (I		nk Deflection = Tank Diameter from t at low end when device is at high end = Di					effection	
		v end when device is at middle = Distance						
			eterminatio					
Method of	f	Product level gauged at two separate ta	ank openings		Elevation of each	n end of tank surv	eyed with a level	
Determining Ta	nk Tilt	Measured with a tank inclinometer			Other (specify):			
	Tan	k ID (product stored)						
Tank	capacit	y greater than 4,000 gallons?	Yes I	٩V	Yes No	Yes No	Yes No	
	Tank	Tilt can be determined	Yes I	No	Yes No	Yes No	Yes No	
	Tota	al Tank Length (inches)	319		319	319		
Lengt	th betwe	en measuring points (R) (Inches)	159		159	279		
P	roduct le	evel measured at "X" (inches)	49"			49"		
P	roduct le	evel measured at "Y" (inches)	48"		49"			
P	roduct le	evel measured at "Z" (inches)			48"	48"		
Diff	erence b	etween product levels (inches)	1		1	1		
	Overa	all Tank Tilt (inches)	2		2	1.14		
		Tank Deflectio	n Determina	tio	n			
Tank di	iameter a	as it appears on tank chart (inches)						
	Measur	ed Tank Diameter (Inches)						
	Tank	Deflection (Inches)						
		Device Position an	d Ullage Ca	lcul	ation			
Туре	of Devi	ce: (Ball Float or Drop Tube)	B.F. 🗌 🛙).T	B.F. D.T	B.F. D.T	B.F. D.T	
Overfill		Low End ("X" position)						
Device is		Center ("Y" position)						
Installed at		High End ("Z" position)						
Distance of De	evice be	low tank top at low end of tank (inches)						
		Ullage (gallons):						
(based on depth	of devic	e below tank top at the low end of the tank)						

Tank Deflection

- Straight forward:
 - Tank diameter from tank chart
 - Tank diameter measured
 - Take the difference. 96 95 = 1''

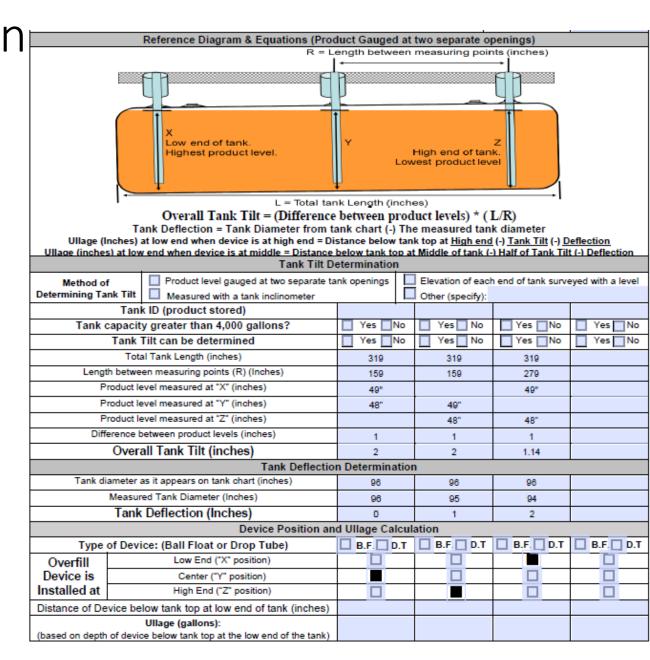
**Note: you should measure tank diameter at all available openings.

Take the smallest diameter measurement.

Ex. You measure:

95" and 94" from 2 different openings. You should go with 94".

This is worst case scenario.



Distance of device below tank top at low end of tank

- These sections ultimately is what determines pass / fail.
- You need results from pg. 1
- Then comes the math.
- Equation to use is based on where your device is located.

		Device Position an	d Ullag	e Calcul	ation				
	Туре	of Device: (Ball Float or Drop Tube)	B.F	D.T	B.F. D.T	B.F. D.T	B.F. D.T		
	Overfill	Low End ("X" position)							
	Device is	Center ("Y" position)							
	Installed at	High End ("Z" position)							
	Distance of De	vice below tank top at low end of tank (inches)							
	(based on depth	Ullage (gallons): of device below tank top at the low end of the tank)							
		Alternative Method Res	sults (mark all that apply)						
		tops <u>OR</u> the overfill devices installed in them el with each other	🗌 Yes	No No	Yes No	□ _{Yes} □ _{No}	Yes No		
e	Ball float is "preci before tank top fi	ision" type and initial restriction occurs 30 min ttings wetted.	Ves	No No	Yes No	□ _{Yes} □ _{No}	∎ _{Yes} ∎ _{No}		
C		is "2 Stage" device and complete shut off occurs ttings wetted. (Ullage of at least 1 inch required.)	Yes	No	Yes No	Yes No	Yes No		
	Inspection	for Alternative Method (Pass / Fail)							

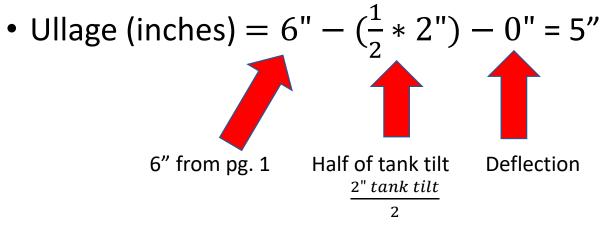
Distance of device below tank top at low end of tank

- From pg. 1 we had 3 devices fail.
 - Regular @ 6"
 - Hwy Diesel @ 5"
 - Off Road Diesel @ 8"
- These numbers are used by equations.

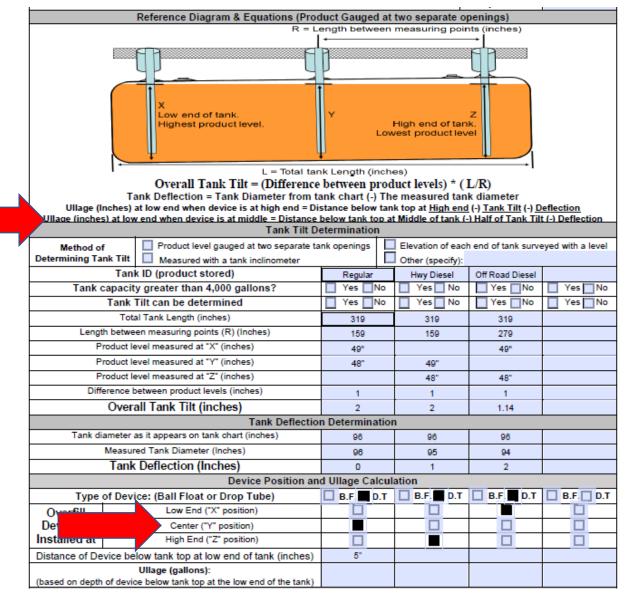
	Inspection Results for the Year				
	Tank ID (product stored)	Regular	Premium	Hwy Diesel	Off Road Diesel
	Tank Volume (gallons)				
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	EBW	Emco	OPW	OPW
	Overfill Device Model	Auto Limiter	A1100	61 SO	71 SO
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
even even even even even even even even	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
Float Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
oat	Length of Ball Float Valve (inches)				
Ē	Height of tank top manway (if applicable) (inches)		('		
Ball	Distance below top of tank that ball float valve is set (inches)		[]		
· '	Indicate tank capacity when flow restriction occurs (%)		/		
,	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
vice	Length of upper tube to the "Reference Point" (inches)	36	44	36.5	39.5
Trop Tube Device	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
ube	Height of tank top manway (if applicable) (inches)	0	4.5	0	0
μŢ	Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
8	Distance between Reference Point and Complete Shut off Point	0	0	1.5	1.5
	Distance below tank top where complete shut off occurs (inches)	6	9.5	5	8
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)	98%	95%	98%	96%
<u>o</u>	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)				
lectron Alarm	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	Fail	PASS	Fail	Fail

Device in Middle

- Regular tank DT in middle.
- DT is set at 6" below tank top. Pg. 1
- Use equation for:
 - "Ullage (inches) at low end when device is at middle"



- Ullage (inches) = 5"
- DT is 5" below tank top at the low end of the tank.

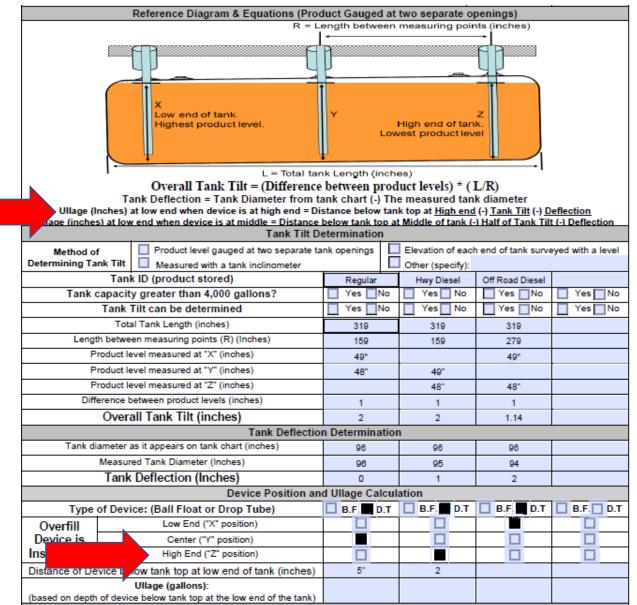


Device at High End

- Hwy Diesel tank DT installed at High end.
- DT is set at 5" below tank top. Pg. 1
- Use equation for:
 - "Ullage (inches) at low end when device is at high end"
- Ullage (inches) = $5'' 2'' 1'' = 2^{2}$

5" from pg. 1 tank tilt Deflection

- Ullage (inches) = 2"
- DT is 2" below tank top at the low end of the tank.



Device at Low End

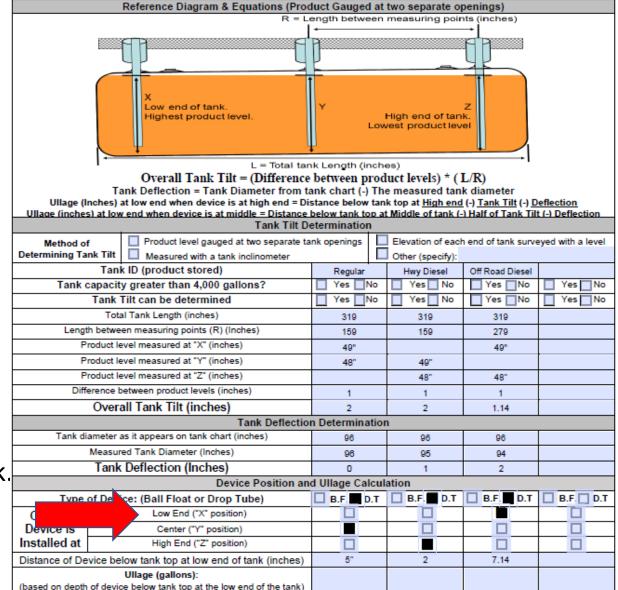
- Off Road Diesel tank DT installed at Low end.
- DT is set at 8" below tank top. Pg. 1
- Is tank tilt greater than deflection?

1.14" > 2" NO. You have to account for deflection

- Take the difference. 2'' 1.14'' = 0.86''
- Ullage (inches) = 8'' 0.86'' = 7.14''

8" from pg. 1 the difference

- Ullage (inches) = 7.14"
- DT is 7.14" below tank top at the low end of the tank.
- Had Tilt been greater than deflection the Ullage (Inches) would simply be 8" (same as pg. 1)



Annual Overfill Prevention Device Inspection The Results pg. 2

- MDEQ requires minimum 1" ullage at low end.
- All 3 passed using alternative method.
- You should mark Pass on pg. 1

**Note some manufacturers have minimum ullage requirements.

• Franklin Defender – 250 gallons

VIIVAS TITVIS		Tank Tilt D	etern	ninati	on	CHIMME OF MILET		
Method o	f	Product level gauged at two separate ta	nk op	ening	5	Elevation of each	end of tank surve	eved with a leve
Determining Ta	-	Measured with a tank inclinometer				Other (specify):		·
	Tan	(ID (product stored)		Regula	ar	Hwy Diesel	Off Road Diesel	
Tank	Tank capacity greater than 4,000 gallons?			Yes	No	Yes No	Yes No	Yes N
	Tank 1	Filt can be determined		Yes	No	Yes No	Yes No	Yes N
	Tota	I Tank Length (inches)		319		319	319	
Leng	th betwe	en measuring points (R) (Inches)		159		159	279	
P	Product level measured at "X" (inches)			49"			49"	
P	roduct le	vel measured at "Y" (inches)		48"		49"		
P	roduct le	vel measured at "Z" (inches)				48"	48"	
Diff	erence b	etween product levels (inches)		1		1	1	
	Overa	all Tank Tilt (inches)		2		2	1.14	
		Tank Deflection	n De	termi	natio	n		
Tank di	iameter a	as it appears on tank chart (inches)		96		96	96	
	Measur	ed Tank Diameter (Inches)		96		95	94	
	Tank	Deflection (Inches)		0		1	2	
		Device Position an	d Ull	age C	alcul	ation		
Туре	of Devi	ce: (Ball Float or Drop Tube)		3.F.	D.T	B.F. D.T	B.F. D.T	B.F. D
Overfill		Low End ("X" position)		Б				
Device is		Center ("Y" position)						
Installed at		High End ("Z" position)						
Distance of De	evice be	low tank top at low end of tank (inches)		5"		2	7.14	
(based on depth	of devic	Ullage (gallons): e below tank top at the low end of the tank)		198	3	50	337	
		Alternative Method Res	ults	(mark	c all ti	hat apply)	_	_
Manifolded tank appear to be lev		the overfill devices installed in them ach other	ΠY	es 🗌	No	Yes 🛛 No	Yes No	Yes 🗆 N
Ball float is "prec before tank top f		pe and initial restriction occurs 30 min etted.	ΠY	es 🛛	No	Yes No	□ _{Yes} □ _{No}	□ _{Yes} □ _N
		age" device and complete shut off occurs etted. (Ullage of at least 1 inch required.)	ΙY	es 🗌	No	Yes No	Yes No	Yes 1
Inspection	for A	ternative Method (Pass / Fail)		Pass	;	Pass	Pass	

The Results pg. 1

- On pg. 1 mark them as passing.
- What about cases where tank has a DT & a BF?

	Inspection Results for the Year				
Tank ID (product stored)		Regular	Premium	Hwy Diesel	Off Road Die
	Tank Volume (gallons)				
Tank Diameter (inches)		96	96	96	96
Overfill device present		Yes No	Yes No	Yes No	Yes N
Overfill Device Manufacturer		EBW	Emco	OPW	OPW
Overfill Device Model		Auto Limiter	A1100	61 SO	71 SO
Device is New		Yes No	Yes No	Yes No	Yes N
	Device in good condition (Note Criteria in Inspection Procedure)		Yes No	Yes No	Yes N
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes N
Ball Float Valve	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes N
	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes N
	Length of Ball Float Valve (inches)				
	Height of tank top manway (if applicable) (inches)				
B	Distance below top of tank that ball float valve is set (inches)				
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes N
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes N
Viõe.	Length of upper tube to the "Reference Point" (inches)	36	44	36.5	39.5
å	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
<u>8</u>	Height of tank top manway (if applicable) (inches)	0	4.5	0	0
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
å	Distance between Reference Point and Complete Shut off Point	0	0	1.5	1.5
	Distance below tank top where complete shut off occurs (inches)	6	9.5	5	8
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)	98%	95%	98%	96%
<u>.0</u>	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes N
Electronic Alarm	Distance below top of tank that electronic alarm is set (inches)				
Ala	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes N
	Inspection result (Pass/Fail)	Pass	PASS	Pass	Pass
Com	ments: Regular, Hwy Diesel, and Off Road Diesel pass using alternative metho	d. pg. 2			

What if they have both BF and DT?

- Options:
 - Permanently Remove the BF
 - Measure BF and DT to pass or fail.
- Document measurements pg. 1 & 2.
- Does complete shut off occur below any ball float nipple in the tank?
- Consider the previous example Hwy & Off Road Diesel Tanks

	Inspection Results for the Year			•	
	Tank ID (product stored)	Regular	Premium	Hwy Diesel	Off Road Diesel
	Tank Volume (gallons)				
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	EBW	Emco	OPW	OPW
	Overfill Device Model	Auto Limiter	A1100	61 SO	71 SO
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
ve	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
loat	Length of Ball Float Valve (inches)				
E	Height of tank top manway (if applicable) (inches)				
Ba	Distance below top of tank that ball float valve is set (inches)				
	Indicate tank capacity when flow restriction occurs (%)				
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
7	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
vice	Length of upper tube to the "Reference Point" (inches)	36	39.5	36.5	39.5
De	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30	30	30	30
ube	Height of tank top manway (if applicable) (inches)	0	0	0	0
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)	6	9.5	6.5	9.5
Dro	Distance between Reference Point and Complete Shut off Point	0	0	1.5	1.5
	Distance below tank top where complete shut off occurs (inches)	6	9.5	5	8
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)	98%	95%	98%	96%
<u>.0</u>	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)				
Ala	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	FAIL	PASS	FAIL	FAIL

Documenting both... BF & DT pg. 1

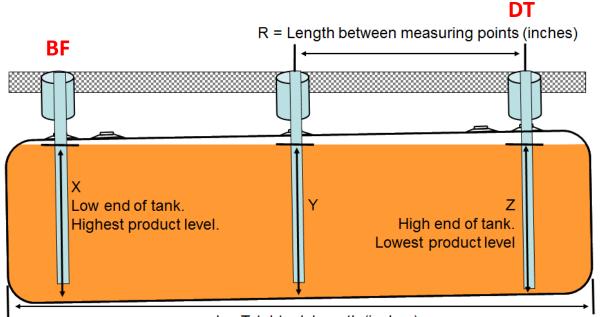
- You should document measurements for both on pg. 1
- As it sits:
 - All 4 devices (2 tanks) fail unless you use pg. 2
 - Whether BF is precision or not does not matter.
 - Drop tube is the primary device. It must pass.
- To pass it, you must confirm that: "Complete shut off occurs below any ball float nipple in the tank"
- I broke these down into 2 columns on pg. 1 but you can combine into 1 column.
- On pg. 2 you must break them down into 2 columns.

		Inspection Results for the Year			•	
		Tank ID (product stored)	Hwy Diesel	Hwy Diesel	Off Road Diesel	Off Road Diesel
		Tank Volume (gallons)	Tiwy Dieser	Tiwy Dieser	On Road Dieser	On Road Dieser
		Tank Diameter (inches)	96	96	96	96
		Overfill device present	90 Yes No	Yes No	90 Yes No	Yes No
		Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fueling
		Overfill Device Model	61 SO	53 VML	71 SO	EBW 308
		Device is New	Yes No			
					Yes No	
		Device in good condition (Note Criteria in Inspection Procedure)	Yes No	Yes No	Yes No	Yes No
		All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
	lve	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
	loa	Length of Ball Float Valve (inches)		6		7
	all F	Height of tank top manway (if applicable) (inches)		0		0
	ä	Distance below top of tank that ball float valve is set (inches)		6		7
		Indicate tank capacity when flow restriction occurs (%)		97%		97%
		Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
		Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
	vice	Length of upper tube to the "Reference Point" (inches)	36.5		39.5	
	De	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30		30	
	adu	Height of tank top manway (if applicable) (inches)	0		0	
	Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)	6.5		9.5	
	Dro	Distance between Reference Point and Complete Shut off Point	1.5		1.5	
	_	Distance below tank top where complete shut off occurs (inches)	5		8	
		Indicate tank capacity when complete (2nd Stage) shut off occurs (%)	98%		96%	
	o	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
	ы Б	Distance below top of tank that electronic alarm is set (inches)				
	Electronic Alarm	Indicate tank capacity when alarm occurs (%)				
	ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
		Inspection result (Pass/Fail)	Fail	Fail	Fail	Fail
- 1		· · · · ·				

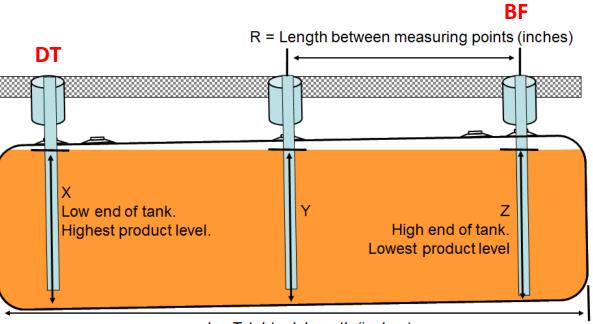
Layout of Example

Highway Diesel





L = Total tank Length (inches)



L = Total tank Length (inches)

Documenting both... BF & DT pg. 2

- Use the same procedure & equations to figure up Tilt & Deflection for BFs.
- Tank Deflection should be the same.
- Tank tilt:
 - You don't have to measure tilt twice
- Figure out where the BF is located. This is what determines which equation to use.

(see layout from previous slide.)

• Use equation to calculate "distance below tank top at low end of tank".

		Tank Tilt De	etermination					
Method of Determining Ta		Product level gauged at two separate ta Measured with a tank inclinometer			Elevation of each Other (specify):	end of tank surve	eyed with a level	
	Tan	(ID (product stored)	Hwy Diesel		Hwy Diesel	Off Road Diesel	Off Road Diesel	
Tank o	capacit	y greater than 4,000 gallons?	Yes No)	Yes No	Yes No	Yes No	
	Tank 1	Filt can be determined	Yes No		Yes No	Yes No	Yes No	
	Tota	I Tank Length (inches)	319		319	319	319	
Lengt	h betwe	en measuring points (R) (Inches)	159		279	279	36	
Pi	roduct le	vel measured at "X" (inches)			49.75	49	48.13	
P	roduct le	vel measured at "Y" (inches)	49					
Pr	roduct le	vel measured at "Z" (inches)	48		48	48	48	
Diffe	erence b	etween product levels (inches)	1		1.75	1	0.13	
	Overa	all Tank Tilt (inches)	2		2	1.14	1.15	
		Tank Deflection	n Determinati	on	1			
Tank di	ameter a	as it appears on tank chart (inches)	96		96	96	96	
	Measur	ed Tank Diameter (Inches)	95		95	94	94	
	Tank	Deflection (Inches)	1		1	2	2	
		Device Position an	d Ullage Calc	ula	ation			
Туре	of Devi	ce: (Ball Float or Drop Tube)	B.F. D.T	r	B.F. 🔲 D.T	B.F. D.T	B.F. 🛄 D.T	
Overfill		Low End ("X" position)						
Device is		Center ("Y" position)						
Installed at	Installed at High End ("Z" position)							
Distance of De	vice be	low tank top at low end of tank (inches)	2			7.14		
(based on depth	of devic	Ullage (gallons): e below tank top at the low end of the tank)	50			337		

Documenting both... BF & DT pg. 2

- From pg. 1 we had BF's measured at:
 - Hwy Diesel @ 6"
 - Off Road Diesel @ 7"
- These numbers are used by equations.

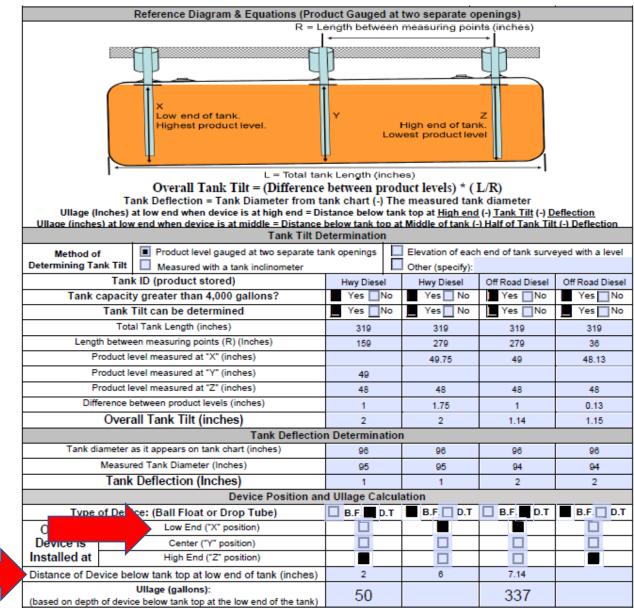
	Inspection Results for the Year				
	Tank ID (product stored)	Hwy Diesel	Hwy Diesel	Off Road Diesel	Off Road Diese
	Tank Volume (gallons)				
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fuelin
	Overfill Device Model	61 SO	53 VML	71 SO	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
é	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
Float Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
oat	Length of Ball Float Valve (inches)		6		7
Ē	Height of tank top manway (if applicable) (inches)		0		0
	Distance below top of tank that ball float valve is set (inches)		6		7
	Indicate tank capacity when flow restriction occurs (%)		97%		97%
,	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	Assembly and all gaskets/seals in good condition	Yes No	Yes No	Yes No	Yes No
vice	Length of upper tube to the "Reference Point" (inches)	36.5		39.5	
De	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30		30	
qpe	Height of tank top manway (if applicable) (inches)	0		0	
Drop Tube Device	Distance below tank top where "Reference Point" is located (Inches)	6.5		9.5	
Dro	Distance between Reference Point and Complete Shut off Point	1.5		1.5	
	Distance below tank top where complete shut off occurs (inches)	5		8	
	Indicate tank capacity when complete (2 nd Stage) shut off occurs (%)	98%		96%	
U	Alarm is both audible and visible to delivery driver	Yes No	Yes No	Yes No	Yes No
E I	Distance below top of tank that electronic alarm is set (inches)				
Electronic	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	Fail	Fail	Fail	Fail

Device at Low End

- Hwy Diesel tank BF installed at Low end.
- BF is set at 6" below tank top. Pg. 1
- Is tank tilt greater than deflection?

2" > 1" Yes. So, You don't have to account for deflection

- Ullage (inches) = 6"
- BF is 6" below tank top at the low end of the tank.
- Had Tilt been less than deflection you would have had to take the difference and subtracted it out like shown in previous DT calculation.

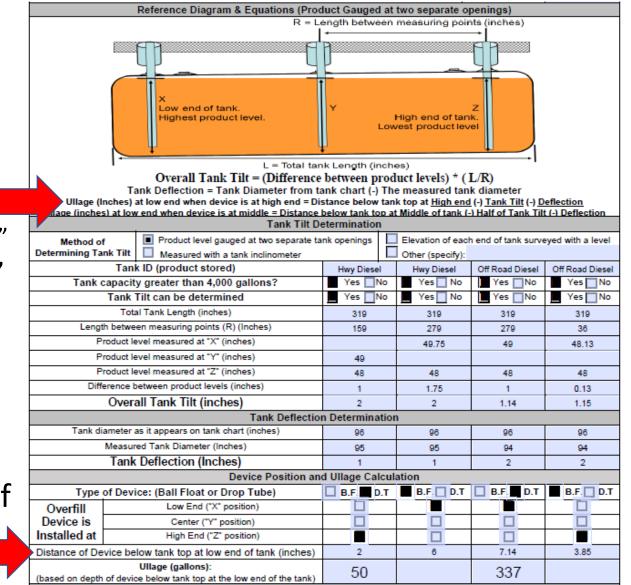


Device at High End

- Off Road Diesel tank BF installed at High end.
- BF is set at 7" below tank top. Pg. 1
- Use equation for:
 - "Ullage (inches) at low end when device is at high end"
- Ullage (inches) = 7'' 1.15'' 2'' = 3.85''

7" from pg. 1 tank tilt Deflection

- Ullage (inches) = 3.85"
- BF is 3.85" below tank top at the low end of the tank.



BF & DT Example... The Results pg. 2

- Hwy Diesel DT device Fails.
 - BF is set lower.
- Off Road Diesel DT device Passes.
 - BF is set higher.
- Comparison is made using "Distance of device below tank top at the low end of the tank."
- The ullage for the BF, isn't important since your only comparing inches.

NIMMS HIRVING		Tank Tilt De	etermination	as movies or same r						
Method of Determining Ta		 Product level gauged at two separate ta Measured with a tank inclinometer 	nk openings	Elevation of each Other (specify):	h end of tank surve	eyed with a level				
	Tank I	D (product stored)	Hwy Diesel	Hwy Diesel	Off Road Diesel	Off Road Diesel				
Tank o	capacity	greater than 4,000 gallons?	Yes No	Yes No	Yes No	Yes No				
	Tank Ti	It can be determined	Yes No	Yes No	Yes No	Yes No				
	Total	Tank Length (inches)	319	319	319	319				
Lengt	h between	n measuring points (R) (Inches)	159	279	279	36				
Pi	roduct leve	el measured at "X" (inches)		49.75	49	48.13				
P	roduct leve	el measured at "Y" (inches)	49							
Pi	roduct leve	el measured at "Z" (inches)	48	48	48	48				
Diffe	erence bet	tween product levels (inches)	1	1.75	1	0.13				
	Overal	l Tank Tilt (inches)	2	2	1.14	1.15				
		Tank Deflection	n Determinatio	on						
Tank di	ameter as	it appears on tank chart (inches)	96	96	96	96				
	Measured	I Tank Diameter (Inches)	95	95	94	94				
	Tank D	Deflection (Inches)	1	1	2	2				
		Device Position and	nd Ullage Calculation							
Туре	of Device	e: (Ball Float or Drop Tube)	🔲 B.F. 📕 D.T	B.F. 🔲 D.T	B.F. D.T	B.F. D.1				
Overfill		Low End ("X" position)								
Device is		Center ("Y" position)								
Installed at		High End ("Z" position)								
Distance of De	vice belo	w tank top at low end of tank (inches)	2	6	7.14	3.85				
(based on depth		Illage (gallons): below tank top at the low end of the tank)	50	260	337	135				
		Alternative Method Res	ults (mark all	that apply)						
Manifolded tank t appear to be leve		he overfill devices installed in them h other	🗌 Yes 🔲 No	Yes No	Yes No	Yes 🛛 No				
Ball float is "prec before tank top fi		and initial restriction occurs 30 min ted.	Yes No	Yes No	Yes No	□ _{Yes} □ _N				
		ge" device and complete shut off occurs ted. (Ullage of at least 1 inch required.)	Yes 🗌 No	Yes No	Yes No	Yes N				
Inspection	for Alte	ernative Method (Pass / Fail)	FAIL	FAIL	PASS	PASS				

BF & DT Example... The Results pg. 1

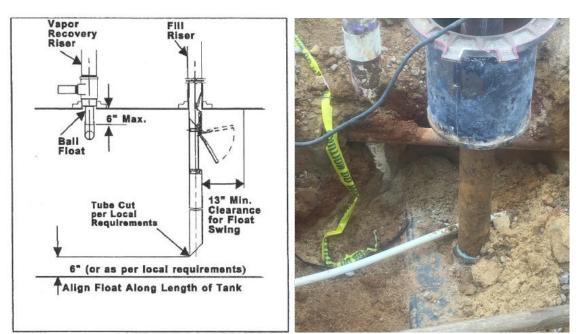
- On pg. 1 now you are ready to answer the question.
- Does "Complete shut off occur below any ball float nipple in the tank"?
 - Hwy Diesel tank BF --- NO
 - Off Road Diesel tank BF --- YES
- DT is primary device. Since it does not pass, both BF & DT in the Hwy Diesel Tank Fail.

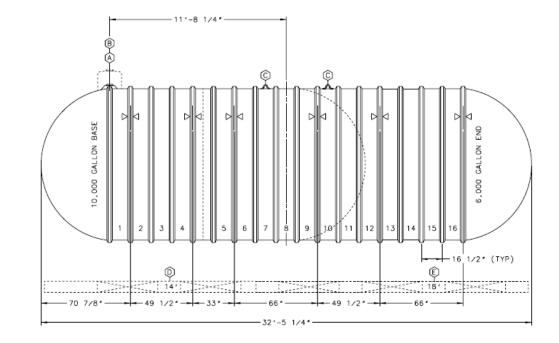
	Inspection Results for the Year				
	Tank ID (product stored)	Hwy Diesel	Hwy Diesel	Off Road Diesel	Off Road Diese
	Tank Volume (gallons)				
	Tank Diameter (inches)	96	96	96	96
	Overfill device present	Yes No	Yes No	Yes No	Yes No
	Overfill Device Manufacturer	OPW	OPW	OPW	Franklin Fuelir
	Overfill Device Model	61 SO	53 VML	71 SO	EBW 308
	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
	All accessible tank top fittings are tight	Yes No	Yes No	Yes No	Yes No
ę	Tank does NOT have a suction or tank syphon line installed	Yes No	Yes No	Yes No	Yes No
Float Valve	Standard drop tubes are installed & in good condition	Yes No	Yes No	Yes No	Yes No
oat	Length of Ball Float Valve (inches)		6		7
Ē	Height of tank top manway (if applicable) (inches)		0		0
Ball	Distance below top of tank that ball float valve is set (inches)		6		7
	Indicate tank capacity when flow restriction occurs (%)		97%		97%
	Complete shut off occurs below any ball float nipple in the tank	Yes No	Yes No	Yes No	Yes No
	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)	36.5		39.5	
á	Length of Fill Riser pipe (Seating position to tank top) (Inches)	30		30	
<u>8</u>	Height of tank top manway (if applicable) (inches)	0		0	
Ĕ	Distance below tank top where "Reference Point" is located (Inches)	6.5		9.5	
ã	Distance between Reference Point and Complete Shut off Point	1.5		1.5	
_	Distance below tank top where complete shut off occurs (inches)	5		8	
	Indicate tank capacity when complete (2nd Stage) shut off occurs (%)	98%		96%	
Q	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)				
Ala	Indicate tank capacity when alarm occurs (%)				
ш	ATG Printout attached	Yes No	Yes No	Yes No	Yes No
	Inspection result (Pass/Fail)	Fail	Fail	Pass	Pass

omments: Off Road diesel drop tube device passes using alternative method. pg. 2

Reinstallation of DT devices... (Specifically OPW flapper type)

- Orientation in the tank matters.
- Flapper needs 13 14" to swing.
- Flapper MUST face away from anything that may bind it.
 - ATG probe
 - Tank Interstice pipe
 - End of tank or compartment
 - Don't forget bubble of FRP "base compartment"
 - BF nipple
- Can the flapper move?
 - During routine deliveries?





Tight fill adapters. OF DT movement

- Your normal tight fill adapter will loosen through out the year.
- Delivery hose twists tight fill when it's walked back after deliveries
- Consequences:
 - Upper tube no longer tight.
 - Gas will leak into spill buckets during delivery. (VERY Common)
 - Can allow DT to spin / move in riser.
- The fix:
 - Swivel type tight fill adapters.
 - Tight fill adapters with set screws.
 - Routine Inspection.

**Note: These are simply recommendations. Not requirement by MDEQ.







Annual Overfill Prevention Device Inspection Electronic Alarm pg. 1

- Must be set to Alarm at 90% capacity
 - Remember: FRP tanks you have to use manufacturer's tank chart.
- You should confirm ATG is programmed properly (# points, capacity)
- You MUST:
 - pull the ATG probe.
 - Raise the float until audible & visual alarm activates
 - Measure from bottom of probe to bottom of fuel float (when alarm activates)
 - Is this measurement at 90% tank capacity?

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUA ANNUAL OVERFILL PREVENTION DEVICE INSPECTION	LITY
ion of all overfill devices is required at installation and at least once every 12 months thereafter.	Date of In

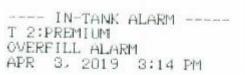
	spection of all overfill devices the absence of a recognize		allation and	at least o	nce eve	ery 12 r	nonths t	hereafter.		Date	of Inspection
De	evice Inspection Procedure" I new Overfill Prevention De	may be utilized.					-				
	UST	Facility					Perso	n Conductir	na Inspe	ectio	n
Facilit	ly Name		MDEQ Faci	ility ID #	Inspec	or's Na					
Physi	cal Address				Compa	ny					
City		County		State MS	MDEQ	Certific	ation #			Expira	tion Date
UST	Owner				Inspec	spector's Signature Date					
Inspection Results for the Year											
		D (product stored)		ie real				1	-		
<u> </u>	Tank Volume (gallons)										
<u> </u>	Tank Diameter (inches)										
<u> </u>	Overfill device present									Thus,	
<u> </u>		Device Manufactur	or			Yes	No	Yes No	Yes	No	Yes No
<u> </u>		fill Device Model	CI								
		evice is New								1.1.	
<u> </u>	Device in good condition (paction Dr	ocedure)		Yes		Yes No	Yes	No	Yes No
	-			ocedure)		Yes	hand 1	Yes No	Yes	No	Yes No
		ible tank top fitting		. in stalls		Yes	_	Yes No	Yes	No	Yes No
alve	Tank does NOT have				a	Yes		Yes No	Yes	No	Yes No
Float Valve		bes are installed &	-	ndition		☐Yes	No	Yes No	Yes	No	Yes No
loa	-	of Ball Float Valve									
Ball		op manway (if appl			-)						
-	Distance below top o				s)						
		acity when flow res				-	-		-		
	Complete shut off occ				ink	Yes	_	Yes No	Yes	No	Yes No
ø		all gaskets/seals in	-			Yes	No	Yes No	Yes	No	Yes No
ovio		ube to the "Referen									
ŏ	Length of Fill Riser pi				es)						
<u>ĝ</u>		op manway (if appl									
Drop Tube Device	Distance below tank top										
ā	Distance between Refe										
	Distance below tank to										
	Indicate tank capacity wh				rs (%)						
.9		udible and visible to				Yes	No	Yes No	Yes	No	Yes No
Aarm	Distance below top of tan										
Electronic		capacity when alar		%)		-				-	
_		TG Printout attache				Yes	No	Yes No	Yes	No	Yes No
-		n result (Pass	/Fall)								
Com	iments:		A 14 a								
5 A	terretive methods include	register has hall 0		ative			and a b	aight grants - 1	0.00/	ank -	
	ternative methods include: p be devices are set to comple							leight greater ti	nan eu% ta	ank ca	apacity or drop
> 0	verfill devices installed prior	to 10/5/2018 may u	use alternati	ive meth	ods but	must o	omplete				
	evice. Alternative methods po Alternative Method must ha										
	ass using Alternative Method										se anoweu to
	PRODUCED BY THE M	ISSISSIPPI DEPT. OF	FENVIRONM	IENTAL C	UALITY	OFFIC	E OF PO	LLUTION CONT	ROL, UST E	BRAN	CH

4/2019

Annual Overfill Prevention

Electronic Alarm pg. 1

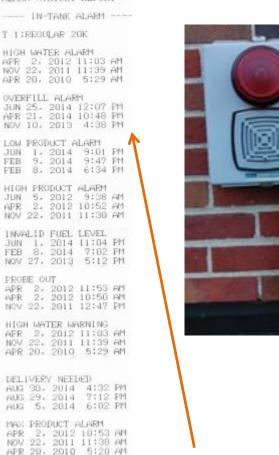
- You should at a minimum keep:
 - ATG in-tank setup print out
 - Overfill Alarm reports generated during test.
- That is your proof you did a good test
- MDEQ prohibits use of "Alternative Method" for Electronic OF alarms.
 - You can't use pg. 2 to pass them.
 - Just reprogram the ATG.





LOW TEMP WARNING NOV 22, 2011 12:48 PM

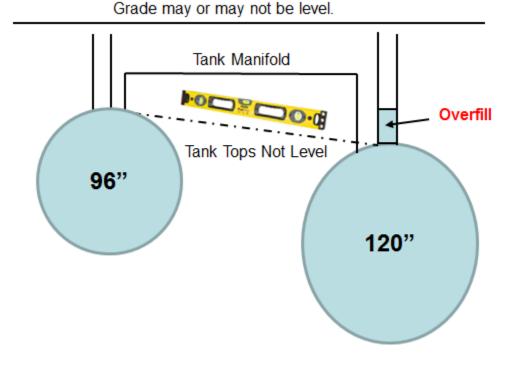
APR 20, 2010 5:48 AM APR 7, 2009 5:05 AM



Should correspond to annual Testing date

Manifold / Syphon tanks....

- Manifold lines, if not accounted for with OF devices will cause an overfill.
- Proceed with caution if you have manifold lines.
 - Measure tank diameters.
 - Do your best to determine burial depth.
 - Do tank tops <u>appear</u> level? <u>Or</u>
 - Are the devices installed in them level?



Manifold / Syphon tanks....

- Manifolded tank tops or the OF devices installed in them appear to be level with each other???
- Doesn't apply to BFs.(Syphon lines can't use BF)
- Required for "Alternative Method" pg. 2 if used to pass DT
- MDEQ doesn't require documentation of your measurements to prove this.
- Is it important for DTs set at 95% on pg. 1?
 - Yes, it can be.

	Alternative Me	thod Evaluat	ion		
Alternative m	ethod cannot be used if:			MDEQ Facility	
	ne is less than 4,000 gallons or Overfill Device w	as installed after	10/5/2018.	ID Number:	
b.) If overall ta	nk tilt cannot be determined.		Γ	Date of	
c.) If any of the	applicable "Alternative Method Results" are ma	rked as "NO".		Inspection:	
	Reference Diagram & Equations (Proc				
	R = L	ength between	measuring po	ints (inches)	
		P			
				1	
		E			
		1			
	X Low end of tank.	×		2	
	Highest product level.		High end of ta		
		Low	est product le	vel	
	LΨ ^ι	₽			
	L = Total tar	nk Length (inch	88)		
	Overall Tank Tilt = (Difference			L/R)	
	Tank Deflection = Tank Diameter from t	ank chart (-) Th	e measured tai	nk diameter	
	Inches) at low end when device is at high end = Di				
Ullade linche	s) at low end when device is at middle = Distance. Tank Tilt D	etermination	Middle of tank	I-I Hair of Tank Tir	(1-) Deflection
Method o	f Product level gauged at two separate ta	ank openings	Elevation of ear	ch end of tank surve	eved with a level
Determining Ta			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)				
Leng	th between measuring points (R) (Inches)				
F	Product level measured at "X" (inches)				
F	Product level measured at "Y" (inches)				
F	Product level measured at "Z" (inches)				
Diff	ference between product levels (inches)				
	Overall Tank Tilt (inches)				
	Tank Deflectio	n Determinatior	1	1	
Tank d	iameter as it appears on tank chart (inches)				
	Measured Tank Diameter (Inches)				
	Tank Deflection (Inches)				
	Device Position an	d Ullage Calcul	ation		
Туре	of Device: (Ball Float or Drop Tube)	B.F. D.T	B.F. D.T	B.F. D.T	B.F. D.T
Overfill	Low End ("X" position)				
Device is	Center ("Y" position)				
Installed at	High End ("Z" position)				
Distance of De	evice below tank top at low end of tank (inches)				
	Ullage (gallons):				
(based on dept	h of device below tank top at the low end of the tank)				
	Alternative Method Res			1	1
	tops OR the overfill devices installed in them rel with each other	🗌 Yes 📃 No	Yes 🗌 No	Yes No	Yes No
	cision* type and initial restriction occurs 30 min				
before tank top		Yes No	Yes No	Yes No	Yes No
	e is "2 Stage" device and complete shut off occurs	Yes No	Yes No	Yes No	Yes No
	fittings wetted. (Ullage of at least 1 inch required.)				
	n for Alternative Method (Pass / Fail)				
PRO	DUCED BY THE MISSISSIPPI DEPT. OF ENVIRONMENT/				
	P.O. BOX 2261 JACKSON, MS 39225 PHONE (601))901-51/1 FAX (0	01)901-0093 http	p://www.maeq.ms.gov	4/2019

Annual SV Testing

- Fuel more acidic = expect more frequent failures
- Easy to pass over and say its okay.
- Don't do it. Test properly.
- Would you want to be next to this when it happens?



	ay be utilized to docu							pact,	crash	, safe	ety or	ine (Tes	st
	Il shear valves is requince of an approved 3							n'e ne		hend	ed or	actics	a the	Droc	oduro					
	ow in the "MDEQ She										eu pi	acuos	e, ure	proc	coure					
	UST F	acility	y								Per	sor	1 Co	ndu	ictin	ng T	est			
Facility Name				MDE	EQ Fa	acility ID #	ŧ	Tes	ter's N	ame										
								-												
Physical Address						Con	npany													
							MD	EQ Ce	tifica	tion #					Expira	tion [lata			
City County State					MD	EQUE	runca	uon #					Expire	ation L	Jate					
UST Owner						N	15	-												
USTOwner								Tes	ter's S	ignati	ure									
									_											_
			ME	MDEQ Shear Valve Test Procedure																
	inspect the shear					allation	and a	ncho	ring.		port	ion (ocate	ed be	elow	th
shear s	ection must be rigid	ly anch	ored	i to th	ne dis	allation	and a r box f	ncho rame	ring. e or th	ne co	port	ion di	spen	ser is	sland					
shear s 2. Manual	ection must be rigid ly trip the shear val	ly anch ve lever	ored r arm	itoth 1. Th	ne dia le lev	allation spense ver arm	and a r box f must	ncho rame move	ring. e or th	ne co	port	ion di	spen	ser is	sland					
shear s 2. Manual to do so	ection must be rigid	ly anch /e lever uickly s	ored r arm snap	i to th n. Th shut	ne dia le lev the p	allation spense ver arm poppet	and a r box f must valve.	ncho rame move	ring. e or th e free	ne co Iy in	e port oncre to the	ion di te di e trip	spen: ped	ser is positi	sland ion w	ithou	t the			
shear s 2. Manual to do so 3. Energiz	ection must be rigid ly trip the shear val b. Lever arm must q	ly anch ve lever uickly s empt to	ored rarm snap disp	toth n. Th shut pense	ne dia le lev the p fuel	allation spense ver arm poppet I from t	and a r box f must valve. he cor	ncho rame move	ring. e or the free	ne co Iyin g no	e port oncre to the zzle i	ion di te di e trip into a	spen: ped a suit	ser is positi able	sland ion w conta	ithou ainer.	t the			
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shear s 2. Manual to do sc 3. Energiz 4. The she 5. Return Shear Valve ID Anchor Lever am Lever am Qop Can product	ection must be rigid ly trip the shear value. Lever arm must que the pump and attrative must effect the nozzle to the hard the nozzle to the hard Dispenser # Product red Properly? In moves freely?	ly anch ve lever uickly s empt to tively ir nging p Y/N Y/N Y/N	ored r arm snap o disp nterm positi	Y/N Y/N	e dis le lev the p fuel ne flo Retu	Allation spense ver arm poppet I from t Te Y/N Y/N	and	respondent normeter move hat normeter ta	ring. e or the free ondin to fue o its p Y/N Y/N Y/N	e co ly in g no l is o rope	Y/N	ion (te die trip into a en po	spen: ped p a suit from sition Y/N Y/N	able the n.	sland ion w conta nozzi	ithou ainer. le.	Y/N Y/N	use	of fo	

Electrical Issues



- Just because the Fire Marshall doesn't see it doesn't mean it's not an issue.
- DEQ inspectors see it
 - We can and may report it to Fire Marshalls.
- You wouldn't need a vehicle to ignite these. Would your SV work?





- Do you have to do the inspection?
- Yes, if:
 - Using it for tank leak detection
 - 0.2 gph leak test. (Static / CSLDs)
 - SIR vendor who pulls data from ATG
 - Electronic LLDs (0.2 or 0.1 gph leak tests)
 - Client asks you to do it.

**Otherwise it is not necessary.

ANNUAL AUTO	MATIC TA	NK GAU	GING EQUI	PMENT IN	SPECTIO	N				
> This form may be utilized to document	it the proper oper	ration of automa	atic tank gauging (ATG) equipment	t. Da	te of Inspection				
 ATG equipment that is utilized to me once every 12 months. ATG maybe of 										
In the absence of a recognized indu outlined below (see "MDEQ Automati										
UST Facil		Equipment insp		on Conduct		ion				
Facility Name		Facility ID # Ins	pector's Name	on conduct	ing inopoor					
Physical Address		Co	Company							
City County		State MC	DEQ Certification #		Expira	Expiration Date				
UST Owner		Ins	pector's Signature		Date					
	Automatic Tank Gauging Equipment Identification									
Manufacturer	Model			Console Serial	Number					
	oh leak tests: (Static	Continuous)	Statistic	al Inventory R	econciliation				
Type of Leak Detection Electron	ic Line Leak De	etector (0.2 or	0.1 gph leak tes	st) 🔲 Other:_						
MDEQ A 1. Inspect console and verify that i			uipment Inspe			or eleme				
 Confirm that both the visual and 		-	-		ateu warnings (alanna.				
 Verify that the correct set-up part 4. Measure the fuel and water con 										
5. Remove tank probes and clean	ensuring all floa	its move freely	without binding a	and that the prol	be is in good co					
 Ensure that the probe fuel and v Reposition the fuel and water flor 						firm accuracy of				
the ATG report for all manually	obtained fuel or	water levels.				mini accuracy of				
 Reinstall probes ensuring that the second sec					eal is tight.					
			ts for the Yea							
Tank / Compartment Identification										
Probe Serial Number										
Console functions are normal and no alarm condition exists	Yes 🗌 No	Yes 🗌 No	Yes No	🗌 Yes 🗌 No	Yes 🗌 No	Yes No				
Visual and audible alarms tested and function correctly	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	Yes No				
Correct parameters are input and leak testing performed	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	Yes No				
All tank probes are in good condition and functioning properly	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	Yes No				
Manually obtained fuel levels indicate ATG inventory is correct	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	Yes No				
Manually obtained water levels indicate ATG inventory is correct	Yes 🔤 No	Yes 🗌 No	Yes No	Yes No	Yes No	Yes No				
Tank cap, seals and communication cable are in good condition	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	Yes No				
ATG Set-up Information attached	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No				
Inspection Result (Pass/Fail)										
Comments:										

DEPARTMENT OF ENVIRONMENTAL

- Do you have to pull the probe?
- With the probe above ground reconnect it.
 - Slowly raise the water float until it triggers "Water Warning" / "High water limit" on ATG.
 - Measure from the bottom of the probe to the bottom of the water float.
 - Does it match what's programed in the ATG?
 - Do the same procedure for fuel float for near the middle of tank & at top of tank when it triggers "Overfill Alarm".
 - Does it match what's programed in the ATG?
- MDEQ inspectors do look for these alarms.
 - If we don't see them what are we to think?



---- IN-TANK ALARM -----T 3:DIESEL HIGH PRODUCT ALARM APR 3, 2019 3:14 PM

T 1:UNLEADED

AX PRODUCT ALARM PR 3, 2019 3:14 PM

---- IN-TANK ALARM -----I 2:PREMIUM DVERFILL ALARM APR 3, 2019 3:14 PM

What about that programing?

IN-TANK SETUP
T 1:REGULAR ULD PRODUCT CODE : 1 THERMAL COEFF :.000070 TANK DIAMETER : 96.00 TANK PROFILE : 1 PT FULL VOL : 12032
FLOAT SIZE: 4.0 INCHES
WATER WARNING : 5.0 HIGH WATER LIMIT: 5.0
MAX OR LABEL VOL: 12032 OVERFILL LIMIT : 96%
HIGH PRODUCT 95%
DELIVERY LIMIT 11430 10% 1203
LOW PRODUCT : 1500 LEAK ALARM LIMIT: 99 SUDDEN LOSS LIMIT:150000 TANK TILT : 0.00
MANIFOLDED TANKS T#: NONE
LEAK MIN ANNUAL : 10828
PERIODIC TEST TYPE QUICK
ANNUAL TEST FAIL ALARM DISABLED
PERIODIC TEST FAIL ALARM DISABLED
GROSS TEST FAIL ALARM DISABLED
ANN TEST AVERAGING: OFF PER TEST AVERAGING: OFF
TANK TEST NOTIFY: OFF
TNK TST SIPHON BREAK:OFF
DELIVERY DELAY : 2 MIN
the second s

• Tank profile:

- 1 point is fine for cylinder tank.
- 4 is Required for "Fiberglass Tank". (Use Tank Chart)
- Water Warning & High Water Limit:
 - Should match what you simulate with probe pulled.
- Max or Label Vol: 100%
 - Tank capacity as it appears on tank chart.
- Overfill Limit & High Product:
 - Should match what you simulate with probe pulled.
- Tank Tilt
- Manifolded Tanks:
 - Are the tanks manifolded / Siphoned? It should show it.

Tank tilt & ATG programing

Should you be checking tank tilt already?

- Yes.
- Tank tilt can be entered as + / tilt.
- Follow manufacturers instructions
- Accuchart?
 - If dispensers out of calibration:
 - Tank Chart in ATG out of Calibration.
 - Monthly 0.2 gph Static or CSLD potentially impacted
- Tilt should be verified when inspecting ATG programing.
- ATG requires accurate chart to produce accurate 0.2 gph leak test.

Calculating Tank Tilt

Use the worksheet in Table 5 to record measurements and perform Tank Tilt calculations for up to six tanks.

- 1. Stick the tank at the fill riser opening at least three times. Enter the average reading in column A of the worksheet.
- 2. Stick the tank at the probe riser at least three times. Enter the average reading in column B of the worksheet.
- Subtract the fuel height at the probe riser from the height at the fill riser (A-B = C). Enter the result in column C of the worksheet.
- 4. Measure the distance between the probe and fill risers. Enter the measurement in column D of the worksheet.
- Divide the value in column C by that in column D to determine the pitch. Enter the quotient in column E of the worksheet.
- 6. Measure the distance from the probe riser to the center of the tank. Enter the distance in column F of the worksheet.
- 7. Multiply column E by column F to determine Tank Tilt. Enter the product in column G of the worksheet.
- 8. Enter the tank tilt (column G) from the worksheet for the selected tank.

Table 5.- Tank Tilt Calculation Worksheet

Tank	A Fuel Height @ Fill Riser	B Fuel Height @ Probe Riser	C (A-B=C)	D Distance Fill to Probe Risers	E Pitch (C÷D = E)	F Distance Probe Riser to Center of Tank	G Tank Tilt (E x F)
1							
2							
3							
4							
5							
6							

What about that programing?

IN-TANK SETUP
T 1:REGULAR ULD PRODUCT CODE : 000070 THERMAL COEFF :000070 TANK DIAMETER 96.00 TANK PROFILE 1 PT FULL VOL : 12032
FLOAT SIZE: 4.0 INCHES
WATER WARNING : 5.0 HIGH WATER LIMIT: 5.0
MAX OR LABEL VOL: 12032 OVERFILL LIMIT : 96%
HIGH PRODUCT 95%
DELIVERY LIMIT 11430 10% 1203
LOW PRODUCT : 1500 LEAK ALARM LIMIT: 99 SUDDEN LOSS LIMIT:150000 TANK TILT : 0.00
MANIFOLDED TANKS T#: NONE
LEAK MIN ANNUAL : 10828
PERIODIC TEST TYPE
ANNUAL TEST FAIL ALARM DISABLED
PERIODIC TEST FAIL ALARM DISABLED
GROSS TEST FAIL ALARM DISABLED
ANN TEST AVERAGING: OFF PER TEST AVERAGING: OFF
TANK TEST NOTIFY: OFF
TNK TST SIPHON BREAK: OFF
DELIVERY DELAY : 2 MIN

- Thermal Coefficent: (Veeder-root)
 - 0.0007 for Regular Unleaded
 - 0.00045 for Diesel
 - 0.00044 for 100% Biodiesel
 - 0.0005 for Kerosene
- What about ethanol blends?
 - Gasohol (~10% ethanol) = 0.00069
- Would it make much of a difference?
 - Possibly if tank is on verge of 0.2 failure.
 - Likely impacts CSLDs more than Static tests
- Check with ATG manufacturer to verify

Product	Thermal Coefficient (U.S. Units)	Thermal Coefficient (Metric Units)
AdBlue or DEF	0.00040	0.00022
Alcohol	0.00063	0.00114
Aviation Gas	0.00075	0.00135
Diesel (fuel oil #2) [DERV]	0.00045	0.00081
<derv> Biodiesel (B20)</derv>	0.00045	0.00081
<derv> Biodiesel (B100)</derv>	0.00044	0.00079
Ethylene Glycol	0.00037	0.00067
Fuel Oil #4	0.00047	0.00085
Gasohol	0.00069	0.00125
Gear Oil, 90W	0.00047	0.00085
Hydraulic Oil	0.00047	0.00085
Jet Fuel	0.00047	0.00085
Kerosene (fuel oil #1) [Paraffin]	0.00050	0.00090
Liquefied Petroleum Gas (LPG)	0.00160	0.00288
Leaded	0.00070	0.00126
Motor Oil	0.00047	0.00085
Premium [4 Star]	0.00070	0.00126
Regular Unleaded	0.00070	0.00126
Super Unleaded	0.00070	0.00126
Low benzene unleaded petrol	0.00070	0.00126
Transmission Fluid	0.00047	0.00085
Turbine Oil	0.00047	0.00085

LEAK TEST METHOD	
TEST CSLD : ALL TANK Pd = 95%	
CLIMATE FACTOR:MODERATE	
	Concession of the local division of the loca
	CIVILLE CONTRACTOR
	Concession of the local division of the loca
LIQUE OFNOOD OFTUD	
LIQUID SENSOR SETUP	
L 1:REG ULD SUMP TRI-STATE (SINGLE FLOAT) CATEGORY : STP SUMP	
L 2:PREM ULD SUMP	
TRI-STATE (SINGLE FLOAT) CATEGORY : STP SUMP	

- Pd = 95% is typical. 99% is more stringent test.
- Climate Factor:
 - Should be set for Moderate. (Were not in a desert)
 - Extreme is other option. (Care should be used before you select it. All other ATG programing / tilt should be checked.)
- "Static" test is preferred. (if facility closes at night time)
- "CSLD" is necessary if site is open 24/7
- High throughput facilities may have trouble passing "CSLDs"
 - Owner should switch to CITLDs (Warren Rogers for ex.)

- If pipe leak detection is annual LTT then they do not have to do this.
 - Check Registration for facility.
- Correct parameters are input?
 - Question is on ATG & LLD test form
 - If general, if PLLD passes 3 gph LLD test you simulate pass it on LLD test form.
 - Programed parameters are more critical for 0.2 & 0.1 gph leak tests

ANNUAL AUT	OMATIC TA	NK GAU	SING EQU	IPMENT IN	ISPECTIC	DN
 This form may be utilized to docum ATG equipment that is utilized to ronce every 12 months. ATG maybe In the absence of a recognized in 	neet the tank or pi conducting monthl	pe leak detecti y 0.2 gph leak	on requirements ests or Statistica	is required to be I Inventory Reco	e inspected nciliation.	ate of Inspection
outlined below (see "MDEQ Automa	atic Tank Gauging E	Equipment Insp	ection Procedure	") may be utilized	d.	
UST Fac				on Conduct	ting Inspec	tion
Facility Name	MDEQ F	acility ID # Ins	pector's Name			
Physical Address		Co	mpany			
City County		State MD	EQ Certification #		Expi	iration Date
ouny ouny		MS				
JST Owner		Ins	pector's Signature		Date	2
Διι	tomatic Tank	Gauging F	auinment Id	entification		
/anufacturer	Model	ounging L	quipinent la	Console Seria	l Number	
Type of Leak Detection	gph leak tests: (cal Inventory F	Reconciliation
Electro	onic Line Leak De	tector (0.2 or	0.1 gph leak te	st) 🔲 Other:_		
 Remove tank probes and clean Ensure that the probe fuel and Reposition the fuel and water the ATG report for all manually Reinstall probes ensuring that If ATG is equipped with printer 	I water floats are the floats, measure dis a obtained fuel or we the tank riser cap	ne correct type stance from bo water levels. seals properly	for the product ttom of the prob and the commu	stored in the tar e, and utilize tar nication cable s	nk. nk charts to co	
			s for the Ye			
Tank / Compartment Identification						1
Probe Serial Number						
Console functions are normal and no alarm condition exists	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	o 🛛 Yes 🗆 N
Visual and audible alarms tested and function correctly	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	o 🛛 Yes 🗖 N
Correct parameters are input and lea testing performed	k 🔤 Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	o Yes N
All tank probes are in good condition and functioning properly	Yes 🗌 No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	o 🗌 Yes 🗌 N
Manually obtained fuel levels indicate ATG inventory is correct		Yes 🗌 No	Yes No	Yes No	🗌 Yes 🔲 No	o ∎Yes ∎N
Manually obtained water levels indical ATG inventory is correct	e 🔤 Yes 🔤 No	Yes 🗌 No	Yes No	Yes No	Yes No	
Tank cap, seals and communication cable are in good condition	Yes No	Yes 🗌 No	Yes No	Yes No	Yes 🗌 No	o ∐Yes ∐ N
ATG Set-up Information attached	Yes No	Yes No	Yes No	Yes No	Yes No	o ∐Yes ∐N
Inspection Result (Pass/Fail)						-
Comments:						

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Electronic LLDs

- Correct Parameters?
 - Type of pipe select most appropriate option. Check with ATG manufacturer
 - Pipe Diameter & Length
 - Dispenser Mode:
 - Standard 1 STP
 - Other options multiple STPs / pipe man folded / cycling.
 - Non-Vented:
 - Newer PLLDs serial #'s > 100,000 (veederoot)
 - Pressure Offset (based on altitude, sea level 2000 ft)
 - Typically 0 psi (Range 0-25 psi)
 - Can have significant impact on 0.2 & 0.1 test
 - Vented: Older PLLDs

PRESSURE LINE LEAK SETUP	1281Am
Q 1:REGULAR	
TYP:2.0/3.01N FIBERGLASS 2.01N DIA LEN:500 FEET 3.01N DIA LEN: 0 FEET 0.20 GPH TEST: REPETITIV 0.10 GPH TEST: AUTO SHUTDOWN RATE: 3.0 GPH LOW PRESSURE SHUTOFF:YES LOW PRESSURE SHUTOFF:YES LOW PRESSURE : 0 PSI T 1:REGULAR DISPENSE MODE: STANDARD SENSOR: NON-VENTED PRESSURE OFFSET: 0.0PSI	

Electronic LLDs – Installation Issues

Red Jacket

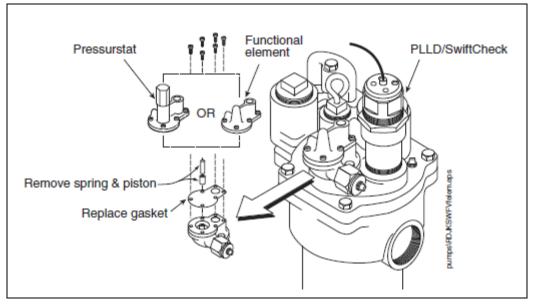


Figure 6. Modifying The Pressurstat/Functional Element In Red Jacket Pumps

- The PLLD SwiftCheck valve eliminates the need for the pump's Pressurstat or functional element relief valve so it must be modified as part of the PLLD system installation. Remove the six 1/4-28 slot-head screws from the Pressurstat or functional element [Figure 6].
- 10. Remove the spring, piston and diaphragm.
- Carefully reassemble the Pressurstat or functional element using a new diaphragm suitable for the fuel involved. Be sure that all mating surfaces are free from debris when reinstalling.

FE Petro – Model R precision check valve

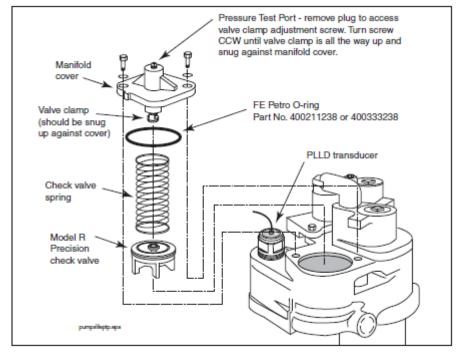


Figure 12. Location Of PLLD Transducer And Model R Precision Check Valve In FE Petro Pump

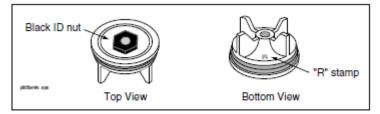


Figure 13. Identifying A FE Petro "R" Style Precision Check Valve

Documentation

- You should at a minimum keep:
 - ATG Setup information printed off
 - In-tank probe alarm reports generated
 - Overfill Alarm
 - High Water Alarm
 - Etc.
- That is your proof that:
 - you did a good test.
 - ATG was programmed properly

T 1:UNLEADED MAX PRODUCT ALARM APR 3, 2019 3:14 PM T 2:PREMIUM OVERFILL ALARM APR 3, 2019 3:14 PM

ANNUAL AUT	OMATIC T	ANK GAU	GING EQU	PMENT IN	ISPECTIO	N
> This form may be utilized to docun	ent the proper op	eration of autom	atic tank gauging ((ATG) equipment	t. Da	ate of Inspection
 ATG equipment that is utilized to once every 12 months. ATG mayb 						
In the absence of a recognized in						
outlined below (see "MDEQ Autor		g Equipment Ins			•	
UST Fac				on Conduct	ing Inspect	tion
Facility Name	MDEG	Σ Facility ID # Ir	ispector's Name			
Physical Address		c	ompany			
City County			IDEQ Certification #		Expir	ration Date
		MS				
UST Owner		Ir	spector's Signature		Date	
Αι	tomatic Tan	k Gauging I	Equipment Id	entification		
Manufacturer	Model			Console Serial	Number	
Type of Leak Detection	gph leak tests:				cal Inventory R	Reconciliation
			r 0.1 gph leak tes			
MDEC 1. Inspect console and verify the			quipment Inspe			or alarma
 Confirm that both the visual a 		-			accu warnings	or alarma.
3. Verify that the correct set-up						
 Measure the fuel and water c Remove tank probes and clear 					-	*
 Ensure that the probe fuel and 	-		-		-	undidon.
Reposition the fuel and water			ottom of the prob	e, and utilize tar	nk charts to cor	nfirm accuracy of
the ATG report for all manual 8. Reinstall probes ensuring that	*		v and the commu	nication cable s	eal is tight.	
9. If ATG is equipped with printe			*			
	Inspe	ction Resu	Its for the Yea	ar		
Tank / Compartment Identification						
Probe Serial Number						
Console functions are normal and n alarm condition exists	° 🗌 Yes 🗌 No	Yes N	o Yes No	Yes No	🗌 Yes 🗌 No	Yes No
Visual and audible alarms tested an function correctly	d 🗌 Yes 🗌 No	Yes N	o 🛛 Yes 🗌 No	Yes No	🗌 Yes 🗌 No	Yes No
Correct parameters are input and lea testing performed	^{ik} Yes No	Yes 🗌 N	o Yes No	Yes No	Yes 🗌 No	Yes No
All tank probes are in good conditio and functioning properly	Yes No	Yes 🗌 N	o Yes No	Yes No	Yes 🗌 No	Yes No
Manually obtained fuel levels indicat ATG inventory is correct	e 🗌 Yes 🗌 No	Yes 🗌 N	o 🗌 Yes 🗌 No	Yes No	Yes 🗌 No	Yes No
Manually obtained water levels indica ATG inventory is correct	^{te} Yes No	Yes N	o 🔤 Yes 🔤 No	Yes No	🗌 Yes 🗌 No	Yes No
Tank cap, seals and communication cable are in good condition	Yes No	Yes N	o Yes No	Yes No	Yes 🗌 No	Yes No
ATG Set-up Information attached	Yes No	Yes 🗌 N	o Yes No	Yes No	Yes 🗌 No	Yes No
Inspection Result (Pass/Fail)						
Comments:						

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Annual Electronic Interstitial Device Test (sensors)

- You should confirm that each sensor is registered properly in ATG.
 - For Ex. STP sump sensor should NOT alarm as Disp ½ sensor
- You should at a minimum keep:
 - sensor alarm reports generated.
- That is your proof you tested the sensor.



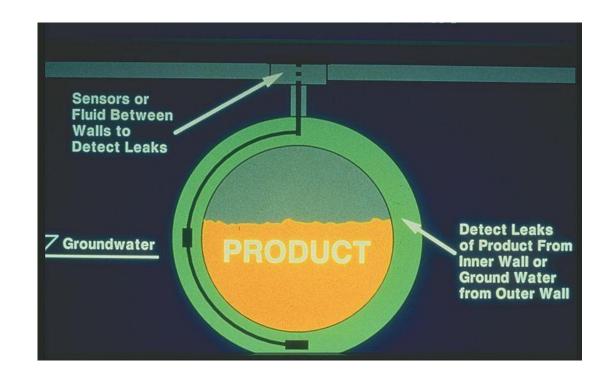
 Testing of electron In the absence of "MDEQ Electronic 	nic interst of an appr	itial monitorin roved 3rª par	g devices is ty test proc	s required a edure or n	nanufacturer's	very 12 mont recommend	ths.		ate of Test
	UST	Facility				Person	Conducti	ing Test	
Facility Name			MDEQ F	acility ID #	Tester's Name				
Physical Address					Company				
City	C	ounty		State MS	MDEQ Certifica	tion #		Expira	tion Date
UST Owner				WI3	Tester's Signati	ure		Date	
					-				
		Electron	nic Inters	stitial Mo	nitoring D	evice Tes	ting		
Reason for Test	Nev	w Installation	1		Existir	ng Installatio	n (annual te	est)	
	Floa	t Switch	(discrimin	nating	non-disc	riminating)		
Type of Sensor	🔲 Opti	cal Sensor			Elec	trical Resist	ance Senso	pr	
	Pre:	ssure / Vacu	um Monito	ring Device	e 🗌 Othe	er (specfy)			
 Confirm that t Visually examt Cause a cond 	nine the d	onic monitor evice to ens	ing device i ure that it is	is properly s not dama	aged or corrod	labeled prop led and any	perly. moving part		
	nine the d dition that he alarm acility alarr he electro	onic monitor evice to ens should trigg condition cau m history rec nic interstitia	ing device i ure that it is er the sens uses the ap cords that th al monitorin	is properly s not dama sor to alarm propriate r his alarm w g device is	installed and aged or corrod n (submerge s response (e.g. vas the result s reinstalled p	labeled prop led and any sensor in app . visual and of an annua roperly.	perly. moving parl propriate flu audible alar I functionalit	id). ms, STP sh ty test.	utdown, etc
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PO BOX 2261 JACKSON, MS 39225 PHONE (601) 961-5171 FAX (601) 961-5093 http:// www.deg.state.ms.us 1/18

Sensor Positioning

- What good will it do if it's not at the bottom?
- You should confirm that sensor is reinstalled at bottom of tank Interstices.
- Within 1" of bottom of sumps.





Annual Spill Bucket Testing

- Why should you test 1.5" below top?
 - Tight fill loosens commonly.
 - Fuel will leak around tight fill
 - Fills spill buckets during deliveries
 - Bucket may fill with fuel above the fill port.



	ANN	UAL SPILL E	BUCKE	T INTEC	GRITY TES	TING			
> This form may be utilized to document integrity testing of spill containment buckets. Date of Test									
 Testing of all spill buckets is required at installation and at least once every 12 months thereafter. In the absence of an approved 3rd party test procedure or manufacturer's recommended practice, the test 									
		EQ Hydrostatic Te							
	UST Faci	lity			Person 0	Conducting T	est		
Facility Name MDEQ Facility ID # Tester's Name									
Physical Address	Physical Address Company								
City	City County State MDEQ Certification # Expiration Date								
<i>c.</i> ,	county		MS				2		
UST Owner				Tester's Sig	nature		Date		
		Sp	ill Buck	et Testin	g				
Reason for Test	New Inst	allation 🗌 E	xisting Inst	allation (anr	nual test)	Release Invest	igation		
Construction	Single-V	Valled 🗌 D	ouble-Wal	ed 🗌	Spill Bucket Lin	er 🗌 Unknow	/n		
	Hydrostati	c (Complete "Test [Data" table	below)					
Type of Test	Vacuum (A	Attach test equipme	nt manufa	cturer's data	sheet/test proto	col to this form)			
.,,	Other (Spe								
		MDEQ Hy	drostati	c Test Pro	cedure				
1. Clean out and p	properly dispose								
2. Visually examin									
		al - Remove adap							
 Fill with water to After 5 minutes 									
bucket to the ne			Water for	ormododro			on or no opin		
5. Leave the spill I					-		-		
		n where both the					e same.		
 If the fluid level If the fluid level 						ses the test.			
		an inch is still critic				ng as their metho	d of leak		
detection For te	sts performed a	as part of a release	e investiga	ation, fluid le	evel readings sh	ould be taken ve	ery carefully.		
 Properly dispos 									
No	te: MDEQ cert	ification as a UST		or the Ye		tainment devices	8.		
		165	t Data N		ai				
Tank ID (produ	ct stored)			Market F					
Area of Spill Buc	ket Tested	Single-Walled Double-Walled		-Walled	Single-Walled Double-Walled	Single-Walled	Single-Walled		
Test Start	Time								
Test End 1	Time								
Test Beginnin	g Level								
Test Ending	Level								
Test Result (P	ass/Fail)								
Vacuum Test – G	auge Range		Gauge	Units	in WC 🔲 O	ther:	-		
Comments:									

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Monthly Monitoring

- <u>Remember</u>: What we once knew to work and work well for leak detection has changed.
- Every method has certain scenarios where:
 - It can be out smarted.
 - A leak may take a long time to catch
 - Or may not be caught
- Goal for this section is to:
 - Provide training & share ideas
 - To know what to teach the tank owners doing their own monthly monitoring
 - Help spread the word on issues / newer requirements.

Ground Water Vapor monitoring

- Remember Reportable Amounts
- Groundwater: 1/8 inch or more
- Vapors:
 - 100 ppm for diesel
 - 1000 ppm for gas
 - <u>OR</u> substantial increase from previous month (Not so significant for diesel)
- Can leaks be masked?
- What does it depend on?

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY MONTHLY GROUNDWATER / VAPOR MONITORING

- > This form may be utilized to document monthly monitoring of groundwater / vapor monitoring wells.
- > You must maintain a written record that monthly monitoring has been accomplished.
- Whenever the monitoring wells contain 6 inches of more of water, visually examine the water and record your observations under the "Groundwater" section at the bottom of this form.
- If the monitoring wells are dry or contain less than 6 inches of water, the wells must be checked with an instrument capable of detecting the product stored in the tanks and you must record your observations under the "Vapor" section of this form.

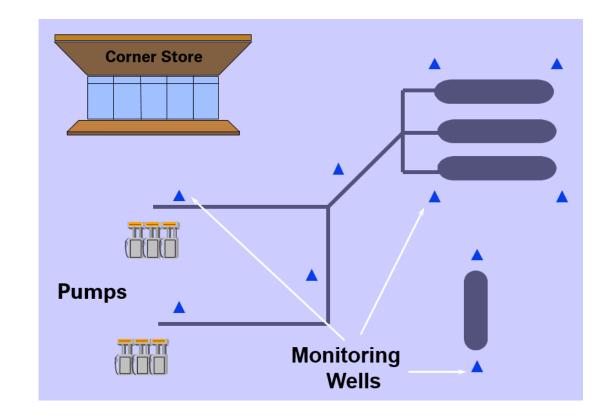
	US	T Facility				Person Conducting Monitoring				
Facility Name MDEQ Facility ID #			Person's Name							
Phy	vsical Address				Co	mpany				
City	/	County		State	Cit	y			State	
				MS						
US	T Owner				Pe	rson's Signature			Date	
		Proced	lure for C	heck	ing	Monitoring Wel	ls			
	Groundwater Monitorin	ng (Wells Contai	in > 6" Wate	er)	Vapor Monitoring (Wells Are Dry <6" water)					
1.	Record in inches the appr as measured from the top			water	 Ensure the vapor monitoring instrument is calibrated in accordance with manufacturer's recommendations. 					
2.	Lower the bailer in the we	ell until it is halfway	submerged.		Obtain readings from lowest possible portion of the well.					
3.	Raise the bailer and visua	ally observe the wa	ter.		Record the vapors in parts per million (ppm) hexane.					
4.	Note if there is any sheen		red in the tan	k	Record the vapor meter manufacturer, model number, and					
-	observed on top of the wa				the date the vapor meter was last calibrated.					
5.	Note if there is a layer of t the water (measure and n layer to the peacest 1/9 in	ecord the thickness			Record any conversion factor used to convert readings to ppm hexane (applies to PID meters only).					
 Report to MDEQ immediately (within 24 hours) anytime you observe a layer of petroleum of 1/8 inch or more on the water. 				 Report to MDEQ immediately (within 24 hours) anytime the vapor readings reach 100 ppm for diesel or 1,000 ppm for gasoline or increase substantially from the previous month. 					ppm for	
	Monitoring Re	sults for the l	Month of				Year			

Monitoring Results for the Month of				Year						
	Monitoring Well Number	1	2	3		4	5	6	7	8
G R O	Measured depth to top of the water in the well (inches)									
U N	Is there any sheen of the stored product on the water?	Yes	Ves No	Yes		′es lo	Yes No	Ves No	Ves	Yes
W A T	Is there any layer of the stored product on the water?	Ves	Ves	Ves		′es lo	Ves No	Ves No	Ves No	Ves
ER	If there is a layer of the stored product, how thick is it? (inches)									
	1									
	Vapor reading (record in parts per million hexane)									
V A P	Have the vapor readings substantially increased from the previous month?	☐ Yes ☐ No	Ves	Ves	-	′es lo	Ves	Ves	☐ Yes ☐ No	Ves
R	Vapor Meter manufacturer and model number									
	Date Vapor Meter was last calibrated		Conversion factor (if used) to calculate ppm hexane							

Ground Water / Vapor monitoring

(potential issues)

- What is the back fill material?
 - Has to be porous enough for fuel or vapors to travel through quickly
 - There is a way to tell. Plug test
- Is native soil different?
 - Does it matter?
- Location of the wells?
 - In tank bed? Near tanks?
 - Does it matter?
- Are there blind spots?
- Expect guidance to come soon from DEQ



Ground Water / Vapor monitoring

(potential issues)

- Can the groundwater be to high?
 - Well casings may prevent detection.
- If groundwater high enough leak is more likely to show up in:
 - STP manways on top of water
 - Under dispensers on top of water
- Perhaps, before it ever shows up in a well.
- Monthly walk throughs (recommended section) encourage looking at all locations for fuel.



ATG Monthly Leak detection

Static or CSLDs 0.2 gph tank leak detection

Once a month:

Print Off recent test
SEP 19. 2017 8:00 AM
CSLD TEST RESULTS SEP 19, 2017 8:00 AM
T 1: UNLEADED PROBE SERIAL NUM 498725
0.2 GAL/HR TEST PER: SEP 19, 2017 PASS
T 2:PREMIUM PROBE SERIAL NUM 016521
0.2 GAL/HR TEST PER: SEP 19, 2017 PASS
T 3:DIESEL PROBE SERIAL NUM 219806
0.2 GAL/HR TEST PER: SEP 19. 2017 PASS

<u>OR</u>

Leak History for the year

CROBSROADS 2796 SOUTH HATPER RD CORINTH MS 38834

DEC 12. 2014 12:41 PM

TANK LEAK TEST HISTORY

T I:UNLD

LAST GROSS TEST PABSED: APR 5. 2011 6:00 PM STARTING VOLUME= 13785 PERCENT VOLUME= 90.2 TEST TYPE = STANDARD

LAST ANNUAL TEST PASSED: APR 5.2011 6:00 FM TEST LENGTH 4 HOURS STARTING VOLUME 13785 FERCENT VOLUME = 90.2 TEST TYPE = STANDARD

FULLEST ANNUAL TEST PABS AFR 5, 2011 6:00 PM TEST LENGTH 4 HOURS STARTING VOLUME= 13785 PERCENT VOLUME= 90.2 TEST TYPE = STANDARD

LAST PEFIDDIC TEST PASSI DEC 12. 2014 4:35 AM TEST LENGTH 30 HOURS STARTING VOLUME - 7007 PERCENT VOLUME - 45.9 TEST TYPE - CSLD

FULLEST PERIODIC FEST PASSED EACH MONTH:

JAN 14. 2014 3:29 AM TEST LENGTH 30 HOURS STARTING VOLUME = 0446 PERCENT VOLUME = 55.3 TEST TYPE = CELD

FEB 11. 2014 5:27 AM TEST LENGTH 34 HOURS STARTING VOLUME = 6931 PERCENT VOLUME = 45.4 TEST TYPE = CSLD

MAR 30. 2014 6:34 AM TEST LENGTH 31 HOURS STARTING VOLUME = 6363 PERCENT VOLUME = 41.7 TEST TYPE = CSLD

APR 22. 2014 1:22 AM TEST LENGTH 30 HOURS STARTING VOLUME= 7310 PERCENT VOLUME = 47.9 TEST TYPE = CSLD

ATG Monthly Leak detection

Static or CSLDs 0.2 gph tank leak detection

- What else should be done?
- DEQ recommends printing off: *In-tank alarm history*
 - Look for:
 - Periodic Test fails
 - Routine fails may indicate a slow leak / bad programing
 - Overfill alarms
 - Indicate OF device may not be set / functioning right
 - High water warning / alarm
 - Routine alarms will indicate water intrusion issues early on.
- DEQ inspectors should check for these. By you watching it gives tank owner advantage to correct issues early.

ALARM HISTORY REPOR	RT.
IN-TANK ALARM	
T 1:REGULAR ULD	
SETUP DATA WARNING APR 12, 1995 2:48	PM
LEAK ALARM SEP 11, 1932 0:04	
SEP 11, 1932 0:04	PM
HIGH WATER ALARM AUG 22, 2011 2:45 MAR 7, 1995 2:33 MAY 6, 1995 7:51	PM
	PM
OVERFILL ALARM OCT 8. 2014 1:24 JUN 4. 2012 11:10 APR 19. 2006 3:47	OM.
OCT 8. 2014 1:24 JUN 4. 2012 11:10 APR 19, 2006 3:47	AM
LOW PRODUCT ALARM MAY 3, 2018 5:33 APR 30, 2018 1:28 APR 20, 2018 12:32	AM PM
	PM
SUDDEN LOSS ALARM DEC 26. 1995 7:55	AM
HIGH PRODUCT ALARM DEC 16, 2014 4:00 OCT 8, 2014 1:13 JUN 4, 2012 11:03	PM AM
	AM
INVALID FUEL LEVEL MAY 3, 2018 5:05 MAY 1, 2018 1:28 APR 16, 2018 5:49	PM
APR 16, 2018 1:28 APR 16, 2018 5:49	PM PM
PROBE OUT	Palid
PROBE OUT AUG 22, 2011 2:48 AUG 22, 2011 2:29 AUG 22, 2011 2:31	PM
HIGH WATER WARNING AUG 22. 2011 2:45 MAY 12. 1995 2:33 MAY 6. 1995 7:51	PM
MAY 6. 1995 7:51	PM
DELIVERY NEEDED	
DELIVERY NEEDED MAY 3, 2018 9:22 APR 30, 2018 4:27 APR 20, 2018 2:40	AM PM PM
	PM
PERIODIC TEST FAIL JUL 22, 2017 5:02 JUL 5, 2017 2:49 JUN 29, 2016 12:49	AM
JUL 5. 2017 2:49 JUN 29, 2016 12:49	AMAM
PERIODIC TEST WARN JUN 9. 0 0:00	
	AM
PERIODIC TEST ALAR SEP 11, 1996 1:04 AUG 10, 0 0:00	PM
ANNUAL TEST ALARM SEP 7. 1996 12:00	AM
CSLD INCR RATE WAR APR 11, 2018 4:59 APR 9, 2018 11:45 MAR 9, 2018 7:33	AM
APR 9. 2018 11:45 MAR 29. 2018 7:33	AM

ATG Monthly Leak detection

In-Tank Alarm history

- What else can in-tank alarm history help you catch?
 - Max Product Alarm Tank was overfilled to 100%. Faulty OF device?
 - High product Alarm Typically set at 95%. If site is using a BF, is BF bad?
 - CSLD INCR Rate Warning Leaky check valve in STP? Water Intrusion? Issue with tank syphon line?
 - NO CSLD Idle Time –Is the STP contact relay stuck? STP not cycling On / off? Is facility very high through-put? ATG probe damaged / corroded? Fast leak > 0.4 gph.

***Printing off the Alarm History is a very EASY way to check for these issues without opening everything up.

Check with ATG manufacturer instructions.

	ALARM HISTORY REPORT
	IN-TANK ALARM
	T 1:REGULAR ULD
	SETUP DATA WARNING APR 12, 1995 2:48 PM
	LEAK ALARM SEP 11, 1932 0:04 PM
	HIGH WATER ALARM AUG 22. 2011 2:45 PM MAR 7. 1995 2:33 PM MAY 6. 1995 7:51 PM
	OVERFILL ALARM OCT 8. 2014 1:24 AM JUN 4. 2012 11:10 AM APR 19. 2006 3:47 PM
	LOW PRODUCT ALARM MAY 3, 2018 5:33 AM APR 30, 2018 1:28 PM APR 20, 2018 12:32 PM
	SUDDEN LOSS ALARM DEC 26. 1995 7:55 AM
	HIGH PRODUCT ALARM DEC 16. 2014 4:00 PM OCT 8. 2014 1:13 AM JUN 4. 2012 11:03 AM
	INVALID FUEL LEVEL MAY 3, 2018 5:05 PM MAY 1, 2018 1:28 PM APR 16, 2018 5:49 PM
	PROBE OUT AUG 22, 2011 2:48 PM AUG 22, 2011 2:29 PM AUG 22, 2011 2:31 AM
1	HIGH WATER WARNING AUG 22. 2011 2:45 PM MAY 12. 1995 2:33 PM MAY 6. 1995 7:51 PM
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	CSLD INCR RATE WARN APR 11, 2018 4:59 AM APR 9, 2018 11:45 PM
	MAR 29. 2018 7:33 AM

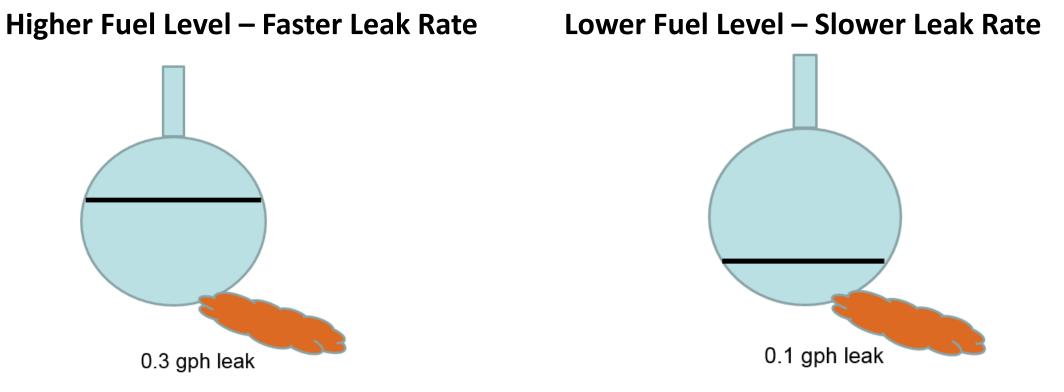
ATG Alarms

Trends

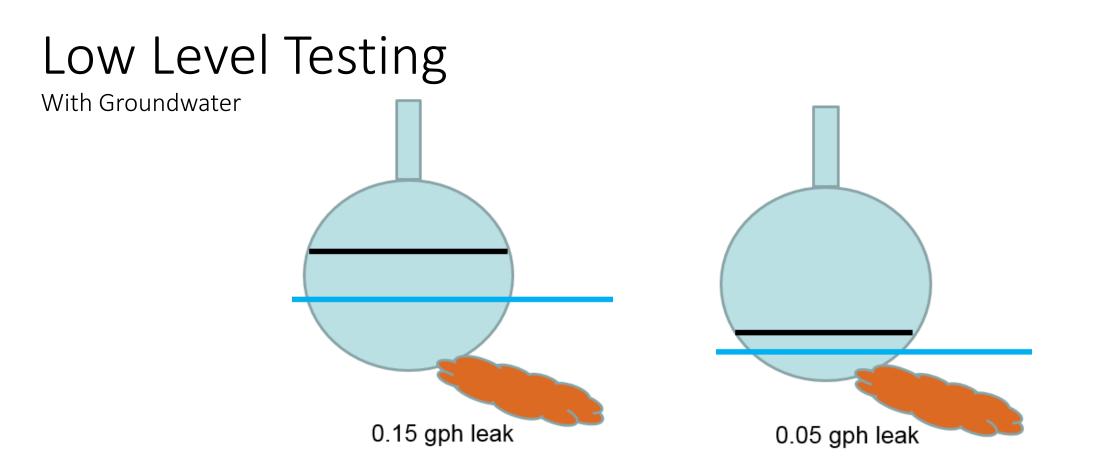
- It is important to pay attention to trends.
- 1 periodic 0.2 gph test fail or inconclusive does not mean tank is leaking.
 - However, you should verify programing.
 - Check GW levels / phase separation. What caused it to fail?
- Frequent periodic test fails is an issue.
- Just because you get 1 pass a month does NOT make it OK.
- Whether using Static or Continuous method Low Level testing can easily mask a leak.

Low Level Testing

No Groundwater



- Same Size Hole. Different head pressures from fuel. Fuel levels fluctuate.
- That is why:
 - The Trends Matter
 - Where the fluid levels are when it fails matters.



- With groundwater now you have pressure pushing back on the leak. Even slower leak rates.
- Fuel levels will fluctuate. Groundwater may or may not.
- That is why:
 - Trends matter. If you routinely have water show up at low fuel levels, you likely have an issue.
 - Routinely checking for water or phase separation matters.

Monthly Electronic Interstitial Monitoring

Sensors

Status Report

AUG 31, 2017 1:37 PM LIQUID STATUS AUG 31, 2017 1:37 PM L 1:DISP 1 2 SENSOR NORMAL L 2:DISP 3 4 SENSOR NORMAL L 3:DISP 5 6 SENSOR NORMAL L 4:DISP 7 8 SENSOR NORMAL L 5:REG STP SENSOR NORMAL L 6:REG INTERRIITUAL SENSOR NORMAL L 7:PRE STP SENSOR NORMAL L 8:PRE INTERSTHTUAL SENSOR NORMAL * * * * * END * * * * *

12/08/2017 09:26:05
SENSOR REPORT Last Available
2 WIRE SENSOR
Unleaded STP SS Ok 12/08/2017 09:26:05
Premium STP SS Ok 12/08/2017 09:26:05
DEF STP SS Ok 12/08/2017 09:26:05
East Diesel STP SS Ok 12/08/2017 09:26:05
West Diesel STP SS Ok 12/08/2017 09:26:05

Alarm History



***Tank Owner is required to print off / monitor both monthly if used for leak detection.

Monthly Electronic Interstitial Monitoring

Sensors – Alarm History Report

- The reason MDEQ now requires alarm history report monthly....
- Someone had a bright idea. Should be no need in this.
- MDEQ wants to know history / what happened.
- Monthly alarm history print out ensures NO Alarms slip by.

ALARM HISTORY REPORT

---- SENSOR ALARM ----L 1:REGULAR STP SUMP STP SUMP FUEL ALARM JAN 19. 2016 1:52 PM FUEL ALARM JAN 19. 2016 1:49 PM

FUEL ALARM JAN 19, 2016 1:45 PM

ALARM HISTORY REPORT ----- SENSOR ALARM ------L 1:REG ULD SUMP STP SUMP FUEL ALARM JAN 29, 2018 8:53 AM FUEL ALARM JAN 11, 2018 1:05 PM FUEL ALARM MAY 25, 2004 10:10 AM

ATG Remote monitoring systems

- Veeder Root Insite 360?
- In-house software?
- Report printed monthly from remote computer had better match history reports printed on site from ATG.
- IF they don't, remote monitoring should NOT be used.

- We are aware that some tank owner in-house software has the ability to:
 - Modify reports printed.
 - Pick and choose alarms shown.
 - Delete reports.
- This isn't acceptable.

Monthly Visual Interstitial Monitoring

- Visually inspect all sumps or stick tank interstice
- Cannot be used on Fiberglass tanks without DEQ approval
- Typically atmospheric:
 - Document fluid type and amount.
 - All fluids must be removed to < 1 inch monthly.
 - If you don't remove it don't say you did
 - Tank owner will be required to provide proof of removal of fluid

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QL	JALITY
MONTHLY VISUAL INTERSTITIAL MONITORING	

- be utilized to document visual interstitial monitoring of secondarily contained UST systems
- monitoring is required on all secondarily contained UST systems installed after October 1, 2008.
- naintain a written record that monthly interstitial monitoring has been accomplished

	US	T Faci	lity							P	erson	Co	nductii	ng I	Monit	orin	g	
Faci	ility Name		-	N	NDEC	2 Facilit	ty ID #	F	Person's l	Vam	e			-				
Phy	sical Address							0	Company									
City		County					State MS	0	City						s	tate		
UST	Owner	1						F	erson's (Signa	ature					ate		
				V	/isu	al Int	tersti	tia	l Moni	tori	ing							
US	T System Components Vi	sually Mo	nitor	red (chec	k all	that ap	oply)											
	Double-walled Tank	🔲 Do	oubl	e-walled	l Pip	e	🗌 ST	TΡ	Sump		🗌 Disp	ense	er Sump		🗌 Tra	nsitio	n Sump	
Inte	erstitial Space: Atmospheric	led)	Va	cuum M	onit	ored		Pressu	re Mo	onitored							
Atmospheric Hydrostatically Monitored (Brine Filled) MDEQ Visual Interstitial N Atmospheric (Dry Interstice) Hydrostatic											a Proce	edur	e					
														cuu	m / Pr	essi	ire	
1. Record whether interstice is dry or wet. 1. Record fluid I 2. If wet, note whether fluid is water or fuel or both. 2. Note whether										hes.	· ·	1. Re	ecord vac	uum	/ press	ure aa	auge readi	ina.
										sen						t present gauge rea		
	Note amount of water / fue		s.						cceptab		~		ading is w				ange.	
4. F	Remove all fluids from inte								able brin	e ra	nge.	3. S	pecify acc	epta	ble rang	e.		_
	Moni	toring	Re	sults f	or t	he N	lonti	h o	f					Y	ear			
	Interstitial Space ID (product stored or dispenser number)																	
C	Component Monitored: Tank / Sump																	
	Condition of interstice (Dry / Wet)	D/W	•	D/W	•	D/	w -	·	D/W	•	D/W	-	D/W	•	D/W	· <u>-</u>	D/W	•
pheric	If wet – Is fluid Water, Fuel or Both?	W/F	•	W/F	•	w/	F _	·	W/F	•	W/F	•	W/F	•	W/F	•	W/F	•
Atmos ph	If wet - Amount of fluid in inches																	
Ab	All fluids Removed during inspection?	Y/N	•	Y/N	•	Y/I	N	·	Y/N	•	Y/N	·	Y/N	•	Y/N	-	Y/N	-
	Active Fuel Leaks Observed?	Y/N	•	Y/N	•	Y/I	N _	·	Y/N	•	Y/N	·	Y/N	•	Y/N	•	Y/N	-
	Fluid level in inches																	
Hydro	Is fluid level within allowed range?	Y/N	•	Y/N	•	Y/I	N _	·	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•
	Specify Brine Range:																	
E	Gauge reading																	_
Vacuum	Is gauge reading within allowed range?	Y/N	•	Y/N	•	Y/I	N _	·	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	-
- Si																		

Double Walled Tanks

(Interstitial Monitoring)

- DW tanks installed prior to 10/1/08
 - Are a risk if interstice is not monitored. (Approx. 670 tanks in MS)
- Hole at tank bottom.
- Tank interstice WILL build up pressure or vacuum.
 - (From fluctuating GW levels and fuel levels)
 - Higher risk with GW / fuel levels routinely in bottom quadrant of tank (Lower pressures)
- Pressure / Vac can aide the ATG in passing a 0.2 gph leak test

(when it would normally fail on a SW tank)

- Interstice should be checked routinely for fuel / water. (even if not used for Leak detection.)
- Water will cause further corrosion on primary tank. (NO CP installed)

Double Walled Tank

New Installations

• If possible:

Tanks should be sloped very slightly towards Interstice riser.

- Why?
 - Faster detection of leak.
 - Easier removal of water.
 - To ensure interstice is dry.
 - Water NOT removed will cause corrosion. (No CP installed) (Not applicable to FRP tanks)
 - Can cause some issues with detecting leak using some Tank Tightness Test methods

Evaluation of Cathodic Protection Systems

- You are required to be licensed as MDEQ CP tester by 8/23/2020 if you:
 - Plan on testing CP in MS
 - Are not a corrosion expert.
 - STI, NACE, Petcon, ALPEC, GTEC approved courses
- Review: MDEQ guidelines for evaluation of UST CP systems link below:

https://www.mdeq.ms.gov/wp-content/uploads/2017/06/cppolicy7-1-02.pdf

Galvanic (Sacrificial anode) CP form

3 ways to pass

- If anodes can / can not be disconnected:
 - 1. 850 mV ON
 - Both local and Remote must be > 850 mV
- If all anodes can be disconnected:
 - 2. 850 mV OFF
 - Local only. (Similar to IC system)
 - 3. 100 mV polarization below 850 mV OFF Local reading
- Repair Needed:
 - Means the CP survey does pass but other issues exist, such as:
 - Water in sumps in contact with flex connector
 - Boots around flex connectors cracked
 - Flex connector continuous with electrical conduit

AAME: ID # ADDRESS: ADDRESS: ADDRESS: III. CP TESTER III. CP TESTER III. CP TESTER IV. CP TESTER'S QUALIFICATIONS TESTER'S NAME: NACE INTERNATIONAL CERTIFICATION NUMBER: COMPANY NAME: MDEQ CERTIFICATION NUMBER:	A site drawing	depicting the UST cathor I. UST OWNER	dic protection sys	tem and all	reference e			ompleted.				
STY: STY: STATE: CITY: COUNTY: III. CP TESTER IV. CP TESTER'S QUALIFICATIONS NACE INTERNATIONAL CERTIFICATION NUMBER: NACE INTERNATIONAL CERTIFICAT	NAME:	1. UST OWNER		NAME:		11. 031 1	ACILITY	ID#				
III. CP TESTER IV. CP TESTER'S QUALIFICATIONS TETER'S NAME: MACE INTERNATIONAL CERTIFICATION NUMBER: DOMPANY NAME: MOEQ CERTIFICATION NUMBER: DOMESS: OTHER (EXPLAN): DTY' STATE: V. REASON SURVEY WAS CONDUCTED (mark only one) Routine - 3 year VITH of months of installation PASS All protected structures at this facility pass the cathodic protection survey and it is judged that adequate cathodic protection is an opposited of the UST system (indicate all orients applicable by completion of Section VII). PASS All protected structures at this facility and the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (indicate all orientection survey and it is judged that adequate cathodic protection NII). PASI All protected structures at this facility and the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (indicate all orientection structures) (both pass or both fail), incomb indicate and the local in other hind state in same test result on all protected structures incomplete Section IVI. PTETER'S SIGNATURE: DATE CP SINVEY PERFORMED: PTAS All protected structures at this facility is the same test result on all protected structures incomplete i	ADDRESS:			ADDRESS	:							
III. CP TESTER IV. CP TESTER'S QUALIFICATIONS TETER'S NAME: MACE INTERNATIONAL CERTIFICATION NUMBER: DOMPANY NAME: MOEQ CERTIFICATION NUMBER: DOMESS: OTHER (EXPLAN): DTY' STATE: V. REASON SURVEY WAS CONDUCTED (mark only one) Routine - 3 year VITH of months of installation PASS All protected structures at this facility pass the cathodic protection survey and it is judged that adequate cathodic protection is an opposited of the UST system (indicate all orients applicable by completion of Section VII). PASS All protected structures at this facility and the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (indicate all orientection survey and it is judged that adequate cathodic protection NII). PASI All protected structures at this facility and the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (indicate all orientection structures) (both pass or both fail), incomb indicate and the local in other hind state in same test result on all protected structures incomplete Section IVI. PTETER'S SIGNATURE: DATE CP SINVEY PERFORMED: PTAS All protected structures at this facility is the same test result on all protected structures incomplete i												
INSTRUCT NACE INTERNATIONAL CERTIFICATION NUMBER: COMPANY NAME: MOEO CERTIFICATION NUMBER: DORESS: OTHER [EXPLAIN]: STY STATE: V. REASON SURVEY WAS CONDUCTED (mark only one) Provide company one) Routine - 3 year Within 6 months of installation Re-survey after repainmodification Other (specify): VI. CATHODIC PROTECTION TESTER'S EVALUATION (mark only one) VI. CATHODIC PROTECTION TESTER'S EVALUATION (mark only one) PASS All protected structures at this facility pass the cathodic protection survey and it is judged that adequate cathodic protection survey and it is judged that adequate cathodic protection survey and it is judged that adequate cathodic protection survey must be evaluated and/or conducted by a corrosion expert (complete Section VII). INCONSLUSIVE If the remote and the local do not both indicate the same test result on all protected structures (both pass or both fail), inconclinities and the local do not both indicate and and/or conducted by a corrosion expert (NII). INCONSLUSIVE If the remote valuated by a corrosion expert when: a) an inconclusive is indicated structures (both pass or both fail). INCONSLUSIVE Incleated and the local dom the final and an acceptal housity occe. INTELER'S BIGNATURE: Date CP SURVEY PEROSMED: INTELER'S BIGNATURE: Incleate andremate applicable by coronpletion of Section VIII).<	CITY:		STATE:	CITY:			COUNTY:					
DOG CERTIFICATION NUMBER: DORESS: OTHER (EXPLAIN): STT* STATE: COMPANY NAME V. REASON SURVEY WAS CONDUCTED (mark only one) Routine - 3 year Within 0 months of installation Resurvey after repairmodification Other (specify): VI. CATHODIC PROTECTION TESTER'S EVALUATION (mark only one) VI. CATHODIC PROTECTION TESTER'S EVALUATION (mark only one) PASS All protected structures at this facility pass the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (molate all ortenia applicable by complete on Stection VIII). FAIL One or more protected structures at this facility as the cathodic protection survey and it is judged that adequate cathodic protection indicate all ortenia applicable by complete Section VIII). INCONSLUSIVE If the remote and the local do not both indicate the same test result on all protected structures since both fail, inconcil indicated and the survey must be evaluated and/or conclusited by a corrosion expert (complete Section VIII). PTESTER'S SIGNATURE: Date CP SURVEY PERFORMED: PASS All protected structures at the facility pass the cathodic protection survey and it is judged that adequate cathodic protection has provided to the UST system (indicate what adore pronepleted structures at the applicable by completion of S		III. CP TESTER		IV. CP TESTER'S QUALIFICATIONS								
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BOUGPP Interrupted (This criterion is applicable only to those galvanic systems where the anodes can be disconnected). 100 mV POLARIZATION Structure tested exhibits at least 100 mV of cathodic polarization (This criterion is applicable to galvanic systems where the anole temporarily disconnected). INV POLARIZATION Structure tested exhibits at least 100 mV of cathodic polarization (This criterion is applicable to galvanic systems where the anole temporarily disconnected). IX. ACTION REQUIRED AS A RESULT OF THIS EVALUATION (mark only one) IX. ACTION REQUIRED AS A RESULT OF THIS EVALUATION (mark only one) REPAIR & RETEST Cathodic protection is not adequate. Repair as soon as practical but within the next 90 days and retest. Cathodic protection is adequate and passes, however there are boots or sumps present that do NOT adequately protein piping termination from corrosion. Repair as soon as practical but within the next 90 days.	850 ON	(This criterion is appli	cable to any galvank	cally protecter	d structure).			-				
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REPAIR & RETEST Cathodic protection is not adequate. Repair as soon as practical but within the next 90 days and retest. Repair Needed Cathodic protection is adequate and passes, however there are boots or sumps present that do NOT adequately proteining termination from corrosion. Repair as soon as practical but within the next 90 days.	100 mV POLARIZAT	be temporarily discon	nected).	-				stems where the anor				
Repair Needed Cathodic protection is adequate and passes, however there are boots or sumps present that do NOT adequately prot piping termination from corrosion. Repair as soon as practical but within the next 90 days.												
piping termination from corrosion. Repair as soon as practical but within the next 90 days.	REPAIR & RETE			·			-					
NONE Cathodic protection is adequate. No further action is necessary at this time.	Repair Neede											
	NONE	Cathodic protection	is adequate. No fu	rther action i	s necessary a	t this time.						

Galvanic (Sacrificial anode) CP form

- Description of UST system
 - Get info from DEQ database

(slides at end of class)

- Pipe terminations
 - You should inspect each pipe termination and list what it's using
 - You can group pipe terminations at the same location. (Ex. Disp ½ all booted or sump)

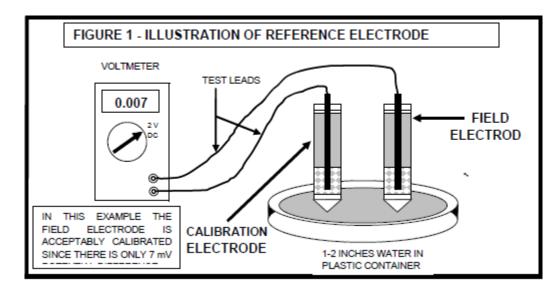
				A. DE	SCRIPTION	JF USI STSIE			
	TANK #	PRODUCT	CAPACITY	TANK	S MATERIAL	INSTALL	PIPING M	ATERIAL	INSTALL
-	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8				0.0.0.0				
			TYPE OF		PIPING TERM	TYPE OF	1		TYPE OF
	LOC	ATION	CORROSION	LC	DCATION	CORROSION PROTECTION	LOCA	TION	CORROSION
		ample) LAR STP	(example) SUMP	DIS	(example) P 1/2 SUMP	(example) GALVANIC	(exar PREMIU	nple) JM STP	(example) BOOTED
			Cathod	ic Protec	tion Reference	Cell Calibration	n Information	1	
7/	Cell #	Dat	te last calibrat	ed	(Calibrated by:		Potential	Difference (mV)
	1								
	2								
						SYSTEM REPA			
									t of the MDEQ cathodic
			-		-	sign or documention	-		6 1 1 1
					pipe (attach corrosi piping terminations.	on expert's design or	documention ind	ustry standard v	vas tollowed).
			-		tions in containment	sumps.			
			ks/piping or piping	terminatio	ns electrically isolate	ed (explain in "Rema	rks/Other" below)		
	Other (e	xplain):							
	Comments:								
	Description	of Repairs Need	ded:						
	PRODU	CED BY THE MI	SSISSIPPI DEPA	RIMENT	OF ENVIRONMEN	TAL QUALITY, OF	HICE OF POLLU	TION CONTR	OL, UST BRANCH

Reference cell calibration

- Reference cell calibration:
 - You should have a virgin cell

(not used for testing or recently remixed)

- Place tips of both test cell and virgin cell in tap water. Connect volt meter. Record difference.
- < 10 mV difference your test cell is good.
- Recalibration depends on how often you test CP.



Galvanic (Sacrificial anode) CP form

- All structures tested should be isolated.
- Structure may fail Continuity survey but may pass CP survey
 - Repair needed. Pg. 1
 - Structure still passes CP survey

 When conducting a fix Conduct point-to-point For galvanic systems, 	tilized to conduct measure ed cell - moving ground su test between any two stru the structure that is to be	rvey, the reference of ctures for which the	electrode must be p fixed cell-moving g	placed in the soil at a round survey is inco	a remote location and le inclusive or indicates po	ft undisturbed. ssible continuity.	tems.
FACILITY ID NUMBER:			NOTE: The survey	is not complete unless	all applicable parts of Sect	ions I - XIV are also co	mpleted
DESCRIBE LOCATION OF "FIXE	D REMOTE" REFERENCE ELE	CTRODE PLACEMENT:					
STRUCTURE	\$ TESTED	POINT – TO – POINT TEST METHOD	FIXED CELL	- MOVING GROUN	D TEST METHOD	TEST RESU	JLTS
STRUCTURE "A"1	STRUCTURE "B"2	POINT-TO-POINT VOLTAGE DIFFERENCE ³	STRUCTURE "A" FIXED REMOTE VOLTAGE ⁴	STRUCTURE "B" FIXED REMOTE VOLTAGE ⁵	STRUCTURE "A" / STRUCTURE "B" VOLTAGE DIFFERENCE"	ISOLATED / CONTINUOUS / INCONCLUSIVE ⁷	PASS FAIL
(example) PREMIUM TANK BOTTOM	(example) PREMIUM FILL RISER		(example) -921 mV	(example) -915 mV	(example) 6 mV	(example) CONTINUOUS	FAI
(example) PREMIUM TANK BOTTOM	(example) PREMIUM FILL RISER	(example) 17 mV				(example) ISOLATED	PAS
							

Galvanic (Sacrificial anode) CP form Establishing Remote earth – New to galvanic form

Where your remote cell is located matters.

This should be done prior to testing continuity if using fixed cell – moving ground method.

- Use same structure (Ex. Reg tank bottom)
- Take remote reading (Ex. 850 mV)
- Move remote minimum 10 ft away.
- Take 2nd remote reading (Ex. 856 mV)
- Difference should be 6 mV or less
 - If it is NOT your remote location is influenced by stray current / raised earth. Try again.
 - If it is 6 mV or less,
 - Pick which remote location you want to use.
 - Move cell back to that spot and begin CP test.

-	 This section may be utiliz The reference electrode The local and remote vol 	VANIC (SACRIFICIA ized to conduct a survey of a must be placed in the soil d oltage (s) must be -850 mV o d when both the local and the	a galvanic cath lirectly over the or more negativ	nodic protection e tested structu ve; <u>OR</u> meet th ture-to-soil pot	n system by ot ure (local) <u>and</u> he 100 mV pol tentials do not	btaining 1 25-10 arizatio result i) structure-to-soi D feet away from n criterion in ord n the same outc	l potential me the structure er to pass. ome (both pas	asurements. (remote).
N	Establish	ment of Remote Earth		Tec	st Location		Remote Voltag	e Remot	e used for CP Survey
1	DESCRIBE LOCATION OF REMOTE		MENT #1 (R1):	(Ex. Regular Tar			(Ex860 mV)		Yes 🗌 No
	DESCRIBE LOCATION OF REMOTE			(Ex. Regular Tar	nk Bottom)		(Ex866 mV)		Yes 🗌 No
	* Remote Earth must be est reading. See MDEQ CP po		irate remote	Diffe	erence =		(Ex. 6 mV)	recorde	Il measurements d in mV unless noted.
	STRUCTURE OR CONTACT POINT ²	LOCAL REFERENCE CELL PLACEMENT ¹	LOCAL / ON VOLTAGE ⁴	REMOTE VOLTAGE ⁴	INSTANT OFF VOLTAGE ⁵	00 mV ENDI VOLT/		ELAPSED TIME ⁵	PASS/ FAIL/ INCONCLUSIVE®
	(example) PLUS TANK BOTTOM	(example) PLUS TANK STP MANWAY	(example) -928	(example) -810					(example) INCONCLUSIVE
	(example) DIESEL STP PIPE TERM	(example) WATER STP SUMP	(example) -879		(example) -725	(exam -42		(example) 10 min	(example) PASS

Galvanic (Sacrificial anode) CP form 100 mV Polarization- New to galvanic form

- If local & remote not 850 mV or greater you can use this section to pass structure.
- Only applies to structures where <u>all</u> anodes can be disconnected at the same time.
- Local "On voltage" has to be 850 or greater.
- Quickly disconnect and reconnect wire.
 - If "Instant Off voltage" is:
 - 850 mV or higher it passes.
 - less than 850 mV you can use 100 mV polarization.
 - Disconnect wire again.
 - Reading should drop 100 mV below "Instant Off voltage"
 - Record time it took to depolarize 100 mV
- This primarily should be used for anodes in sumps but the theory applies to all galvanic CP.

 This section may be util The reference electrode The local and remote volume 	VANIC (SACRIFIC) ized to conduct a survey of a must be placed in the soil d bitage (s) must be -850 mV o d when both the local and the	a galvanic cath irectly over th or more negati	nodic protectio e tested struct ve; <u>OR</u> meet t ture-to-soil po	n system by o ure (local) <u>and</u> he 100 mV po tentials do not	btaining stru 1 25-100 feel larization crit result in the	cture-to-soil t away from erion in orde same outco	potential me the structure er to pass. ome (both pa	easurements e (remote). ess or both fa	ail).
Establish DESCRIBE LOCATION OF REMOTE	ment of Remote Earth	EMENT #1 (R1):		rvey is not compi st Location nk Bottom)	ete uniess all aj	mote Voltag 50 mV)		te used for CP	· ·
* Remote Earth must be est reading. See MDEQ CP p	tablished to ensure an accu		(Ex. Regular Ta	nk Bottom) erence =		55 mV) /V)		Yes	
STRUCTURE OR CONTACT POINT ²	LOCAL REFERENCE CELL PLACEMENT ³	LOCAL / ON VOLTAGE ⁴	REMOTE VOLTAGE ⁴	INSTANT OFF VOLTAGE ⁵	00 mV POL ENDING VOLTAGE ⁵	ARIZATION VOLTAGE SHIFT ⁵	ELAPSED TIME ⁵	PAS FAI INCONCL	Ū.
(example) PLUS TANK BOTTOM	(example) PLUS TANK STP MANWAY	(example) -928	(example) -810					(exam INCONC	
(example) DIESEL STP PIPE TERM	(example) WATER STP SUMP	(example) -879		(example) -725	(example) -428	(example) 297	(example) 10 mln	(exan PAS	

- 2 ways to pass
- Instant OFF voltage:
 - 1. 850 mV OFF or greater
 - 2. 100 mV polarization below 850 mV OFF Local reading
- Repair Needed:
 - Means the CP survey does pass but other issues exist, such as:
 - Water in sumps in contact with flex connector
 - Boots around flex connectors cracked
 - Continuity issues.

IMPRES	SED CURRE		of Mis			EVALUAT	TION				
> This form must be utili	ized to evaluate ur	nderground storag	ge tank (US	T) cathodi	c protection syste	ms in the Stat	te of Mississippi.				
 Access to the soil dire 											
 A site drawing depicting 	-	lic protection syst	em and all	reference			completed.				
I. US	TOWNER		II. UST FACILITY								
NAME.			NAME:				10 #				
ADDRESS:			ADDRESS:								
CITY:		STATE:	CITY:			COUNTY:					
	P TESTER				P TESTER'S (TIONS				
TESTER'S NAME:			NACE INTE	RNATIONAL	CERTIFICATION NU	MBER:					
COMPANY NAME:			MDEQ CER	TIFICATION	NUMBER:						
ADDRESS:											
CITY:		STATE:	OTHER (E)	(PLAIN):							
	V. REAS	SON SURVEY	WASC	ONDUCT	FED (mark only one	9)					
Routine - 3 year	Within 6 months of	installation	Re-survey a	after repair/n	nodification	Other (specify):					
1	VI. CATHODIC	PROTECTIO	N TESTE	R'S EV	ALUATION (ma	rk only one)					
PASS	All protected structu has been provided						quate cathodic protection				
FAIL	One or more protection has not b					and it is judged f	that adequate cathodic				
INCONCLUSIVE	The adequacy of th	e impressed curren	t system mu	st be evalua	ted by a qualified o	orrosion expert	(complete Section VII).				
CP TESTER'S SIGNATURE:					DATE CP SURVEY						
	VII. COR	ROSION EXP	ERT'S E	VALUAT	ION (mark only o	ne)					
The survey must be conducted a system are made; b) stray curre	and/or evaluated by a	corrosion expert wh	en: a) supple	mental anode	es or other changes I	n the constructio	n of the Impressed current				
PASS	All protected structu has been provided						quate cathodic protection				
FAIL	One or more protect protection has not b						that adequate cathodic tion of Section IX).				
CORROSION EXPERT'S NAME:				COMPANY	NAME:						
NACE INTERNATIONAL CERTIF	IGATION.			NACEINTE	RNATIONAL CERTIF	GATION NUMBE	.n.				
CORROSION EXPERT'S SIGNAT	TURE:					DATE:					
	VIII. CRITE	RIA APPLICAE	BLE TO E	VALUATI	ON (mark all that a	pply)					
850 INSTANT OF		e-to-soil potential n ve current temporar				to a Cu/CuSO4	reference electrode with				
100 mV POLARIZATI		e(s) exhibit at least									
IX.	IX. ACTION REQUIRED AS A RESULT OF THIS EVALUATION (mark all that apply)										
REPAIR & RETEST	Cathodic protection						etest.				
Repair Needed	Cathodic protection the piping termination						OT adequately protect				
	Cathodic protection	is adequate. Monit	or the rectific	er every 60 d	days to ensure adeo	uate operation.					
ROUTINE	If the rectifier ampe										
MONITORING	-			-		aot a quaimed p	erson to investigate.				
	The next "routine" o				,						
PRODUCED BY THE MIS PO BOX 10385, JACKSO					, OFFICE OF POL E (601) 961-5093						

- Pg. 2 same as galvanic form:
 - Description of system
 - Piping terminations
 - Reference cell calibration

The difference: For pipe terminations using IC system you should complete "Continuity survey" before answering this.

This is critical step.

	X. DESCRIPTION OF UST SYSTEM TANK # PRODUCT CAPACITY TANKS MATERIAL INSTALL PIPING MATERIAL INSTALL												
TANK #	PRODUCT	CAPACITY	TANK	S MATERIAL	INSTALL	PIPING M	IATERIAL	INSTALL					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
				PIPING TERM	NATIONS								
	ATION	TYPE OF CORROSION PROTECTION	LC	DCATION	TYPE OF CORROSION PROTECTION		ATION	TYPE OF CORROSION PROTECTION					
REGULAR	mple) STP SUMP	(example) GALVANIC		(example) DISP 1/2	(example) BOOTED	(exa PREMI	mple) UM STP	(example) I.C. SYSTEM					
		Cathodi	c Protect	tion Reference	Cell Calibration	Information	1						
Cell #	Dat	te last calibrat	ed		Calibrated by		Potential [Difference (mV)					
1													
2													
3													
Comment	e •		Additi	onal Descriptio	n of UST Syster	m							
conment	3.												
PRODUCE	D BY THE MIS	SISSIPPI DERA			AL QUALITY, OFFI	CE OF POLLU	TION CONTRO	UST BRANCH					
					FACSIMILE (60								

- Rectifier Data:
 - Measured means what your volt meter says when connected.
 - Indicated means what gauge on rectifier says.
 - If not what you "measured" you should adjust and or replace the gauge on rectifier.
- Shunt Calculation:
 - $\frac{0.2 \text{ Amps}}{1 \text{ mV}} = 0.2 \frac{\text{Amps}}{\text{mV}}$
- Measured Amps:

You measure 14 mV across (-) shunt

$$\begin{array}{rcl} 14 \text{ mV} & x & 0.2 & \underline{\text{Amps}} & = & 2.8 \text{ Amps} \\ \text{mV} & \end{array}$$

Ī				XI. IN	IPRES	SED C	URR	ENT R	ECTI	IFIER	DATA	(complete	all applicat	ole)			
ł													1				
┟					ve evalua	ation of the	catho	aic protect	- 1	ion system, a complete evaluation of rectifier operation is necess						ary.	
╞	REC	TIFIER MANUF	FACTURE	R:					RAT	ED DC	OUTPUT	:		VOLTS		A	MPS
	REC	TIFIER MODEL	L:						REC	TIFIER	SERIAL	NUMBER					
	REC	TIVIER SHUNT	r: 1		mV :	0.2		Amps	SHU	JNT FAC	TOR =	0.2		Am	ps/mV		
Λ		TAP SETTI	NGS OR R	HEOST/	AT %					-	C OUTPL	л				но	IR
		COARSE	FINE	RHE	OSTAT		NDICATED INDI VOLTS AI				SURED		MEASUR	ED AMPS		MET	
	As												(Shunt V	oltage = _)		
	FOUND	POSITIVE AND NEGATIVE CIRCUIT MEASUREM								6 (Amps)		Anor	de Shunt	Size =	0.01 Ω	
	ND.	CIRCUIT	1	2	3	4	5	6		7	8	9	10	11	12	тот	AL
		ANODE (+)															Amps
		STRUCTURE (-)															Amps
		Mark this b	oox if rec	tifier v	was no	t chang	ed fr	om the '	AS I	FOUN	D" setti	ings.					
Ī		TAP SETTI	NGS OR R	HEOST/	AT %					D	C OUTPL	л				но	ID
		COARSE	FINE	RHE	OSTAT	INDICA VOLT		INDICA AMP			SURED		MEASUR	ED AMPS		MET	
	"AS											2.8 amp	s (Shunt	Voltage =	14 mV)		
	LEFT		POSITI	VE AND	NEGAT	IVE CIRCI	UIT ME	ASUREM	ENTS	(Amps)		Anor	de Shunt	Size =	0.01 Ω	
	1	CIRCUIT	1	2	3	4	5	6		7	8	9	10	11	12	тот	AL
		ANODE (+)															Amps
		STRUCTURE (-)															Amps
		XII.	DESCRI	PTION	OF C/	ATHODI	C PR	OTECT	ON S	SYSTE	MREP	AIRS AI	ND/OR	ODIFIC	ATION		

- If you have a Junction box:
- Record mV across the shunts: Ex. Measured 2.4 mV across shunt move decimal place
 0.24 amps
- Your total amps should equal your measured amps at rectifier shunt.

				XI. IN	IPRES	SED C	URRI	ENT R	ЕСТІ	IFIER	DATA	(complete a	all applicab	le)				
		In order to	conduct a	an effecti	ve evalua	ation of the	cathod	lic protect	ion sy	stem, a	complete	evaluation	of rectifie	r operation	is necess	ary.		
	RECTIFIER MANUFACTURER: RATED DC OUTPUT: VOLTS														A	MPS		
	RECTIFIER MODEL: RECTIFIER SERIAL NUMBER:																	
L	RECTIVIER SHUNT: 1 mV = 0.2 Amps SHUNT FACTOR = 0.2 Amps / mV																	
H	NE.		_	HEOSTA				Amps	anu		C OUTPU	т П			/5/ IIIV			
		TAP SETTINGS OR RHEOSTAT % COARSE FINE RHEOSTAT				INDICA VOLT		INDICA AMP		MEAS	SURED		MEASURE	ED AMPS		MET		
2	SA.								2.8 amps	(Shunt V	oltage = 1	ر 4 mV						
	"AS FOUND		POSIT	IVE AND	NEGAT	VE CIRCUIT MEASUREMENTS (Amps)							Anode Shunt Size =			0.01 Ω		
		CIRCUIT	1	2	3	4	5	6		7	8	9	10	11	12	тот	AL	
		ANODE (+)															Amps	
		STRUCTURE (-)	0.24	1.13	1.00	0.27	0.23	3								2.87	Amps	
ľ	6	Mark this b	ox if re	ctifier v	was no	t chang	ed fro	m the '	'AS I	FOUN	D" settii	ngs.						
		TAP SETTIN	IGS OR R	HEOST	AT %					D	C OUTPU	л						
		COARSE	FINE	RHE	OSTAT	INDICA VOLT					SURED	I	MEASURED AMPS				HOUR	
3	"AS									(Shunt \	/oltage =)						
Ì	LEFT	POSITIVE AND NEGATIVE CIRCUIT MEASUREMENTS (Amps)) .	Anode Shunt Size =						
	1	CIRCUIT	1	2	3	4	5	6		7	8	9	10	11	12	тот	AL	
		ANODE (+)															Amps	
		STRUCTURE (-)															Amps	



- All structures <u>protected</u> by IC system must be:
 - continuous to rectifier (-) terminal. (6 mV or less)
 - Documented in this section
- IC system readings can fool you.
 - Structures can have good CP readings on it, and not be tied into the rectifier
 - Continuity reading may be 48 mV and still be continuous.
 - Run temporary ground wire between rectifier (-) and structure. Recheck continuity. Is it still reading 48 mV?
 - If so it is continuous.
 - Make a note of what you did to prove it.
- What happens when any metal structure receives current but can't return it back to rectifier (-)?
 - Accelerated Corrosion

XIV. IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM CONTINUITY SURVEY

This section may be utilized to conduct measurements of continuity on underground storage tank systems that are protected by cathodic protection systems

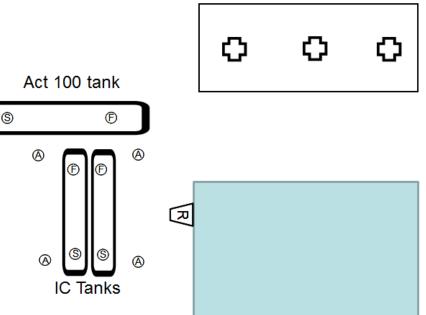
When conducting a fixed cell - moving ground survey, the reference electrode must be placed in the soil at a remote location and left undisturbed.

Consuct point esto between any two solutions on which the next of environg ground survey is inconsusing on ancates possible isolation.
 For impressed current systems, the protected structures in waits be continuous with all other protected structures in order to pass the continuity survey.

FACILITY ID NUMBER:			NOTE: The survey is not complete unless all applicable parts of Sections I-XIV are also completed								
DESCRIBE LOCATION OF "FIXE	D REMOTE" REFERENCE ELE	CTRODE PLACEMENT;									
STRUCTURE	S TESTED	POINT - TO - POINT TEST METHOD	FIXED CELL	TEST RESULTS							
STRUCTURE "A" 1	STRUCTURE "B"2	POINT-TO-POINT VOLTAGE DIFFERENCE ³	STRUCTURE "A" FIXED REMOTE VOLTAGE ⁴	STRUCTURE *B" FIXED REMOTE VOLTAGE ⁵	STRUCTURE "A" / " STRUCTURE "B" VOLTAGE DIFFERENCE	ISOLATED / CONTINUOUS / INCONCLUSIVE ⁷	PASS FAIL [®]				
(example) PLUS TANK BOTTOM	(example) PLUS PIPING AT STP		(example) -915 mV	(example) -908 mV	(example) 7 mV	(example) INCONCLUSIVE	FAIL				
(example) RECTIFIER NEGATIVE	(example) PLUS TANK BOTTOM	(example) 1 mV				(example) CONTINUOUS	PASS				

Impressed Current System CP Form Stray Current

- Common Situations:
 - Coated tank installed near IC system
 - Dispenser pipe terminations near IC system May have galvanic CP, or boots installed? But, it may need to be IC system?
 - STIp3 tank, STP pipe termination NOT tied into IC system
- Use continuity 1st to tell what is what.
- For structures NOT tied into IC system.
 - With "Local" reference cell, volt meter setup, cycle the Rectifier ON / OFF. Do you notice a change in mV?
 - If so, that is stray current.
 - Can affect all examples above.
 - Not all Stray Current needs to be addressed. Talk to your corrosion expert.



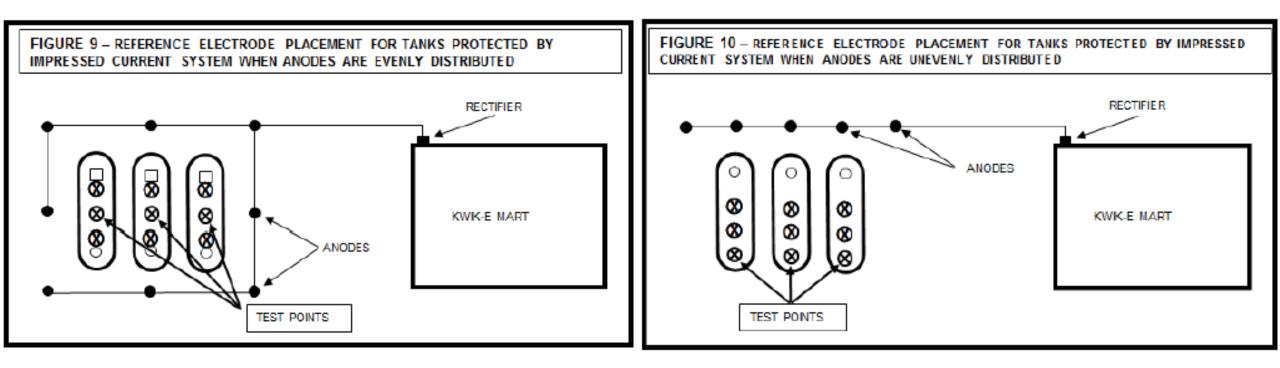
- 2 ways to pass
- Instant OFF voltage:
 - 1. 850 mV OFF or greater
 - 2. 100 mV polarization below 850 mV OFF Local reading

NEW: You are required to use 3 test points over top of the tank.

• Why?

XV. IM	IPRESSED CURRENT O	ATHODI	C PROTEC	TION SYS	STEM SUR	RVEY	
The reference electrode must a valid structure-to-soil potent Both on and instant of potent Three on and instant of potent	o conduct a survey of an impressed of the placed in the soil directly above tail (refer to the MDEQ cathodic prote tais must be measured for each stru- titals must be measured for each tan be -850 mV or more negative or the	the structure ti action evaluation cture that is int in that is interc	hat is being test on guidance doo tended to be und ded to be under	ed and as far a sument for deta der cathodic pro cathodic protect	way from any a iled discussion otection. stion.	active anode as of electrode pl	practical to obtain
FACILITY ID NUMBER:		NOTE: T	his survey is not co	mpiete uniess ai	applicable parts	of sections I – XI	V are also completed
STRUCTURE OR	LOCATION OF LOCAL	ON ⁴	INSTANT ⁵	100 n	nV POLARIZA	TION	PASS /
CONTACT POINT 2	REFERENCE CELL PLACEMENT ³	VOLTAGE	OFF VOLTAGE	ENDING ⁶ VOLTAGE	VOLTAGE SHIFT	ELAPSED® TIME	FAIL / INCONCLUSIVE ⁷
(example) PLUS TANK BOTTOM	(example) SOIL @ REG. STP	(example) -1070mV	(example) -875 mV				(example) PASS
(example) DIESEL PIPE DISPENSER 7/8	(example) SOIL @ Dispenser 7/8	(example) -854 mV	(example) -680 mV	(example) -575 mV	(example) 105 mV	(example) 24 hours	(example) PASS

Not all IC systems are equal Current not distributed evenly. Multiple anodes may have already failed.



Impressed Current System CP Form 100 mV polarization

- Galvanic anodes should NEVER be mixed with IC system
- They can significantly alter your 100 mV depolarization readings.
- MDEQ inspectors do watch for this.
- When rectifier turned off:
 - Readings should not rise above "Instant Off voltage"
 - They should not level off prior to reaching 100 mV.

Example 100 mV depolarization

-2400 mV

- On Voltage
- Instant OFF voltage -825 mV
- Rectifier turned off:
 - 10 minutes pass -815 mV
 - 20 minutes pass -810 mV
 - 30 minutes pass -805 mV
 - 24 hours pass -790 mV
 - 7 days pass 789 mV
- This system FAILS. (Did not drop 100mV) 825-789 = 36 mV drop
- 100 mV depolarization also applies to galvanic anodes. Same method.

100 mV Polarization Is the key to proving CP

- Whether galvanic or IC system
- If system exhibits 100 mV decay from instant OFF reading it has proven itself.
- All anodes protecting the structure, whether galvanic or IC system must be turned off at the same time.
- Using the Min/Max feature on your volt meter can fool you.
- Proving the system will depolarize by 100 mV is the key.

60 Day Rectifier Log

- Minimum Design Amperage
- Look at last passing CP test
- Find total amps (-)

	TAP SETTIN	GS OR R	HEOST	AT %				D		JT					
	COARSE	FINE	RHE	RHEOSTAT		TED	INDICATED AMPS				MEASURE	ED AMP	s	MET	
"AS	2	4			N.A		2.75	10	.08	2.72	(Shunt Vo	oltage =	13.6 ₎		
FOUND"		POSITI	VE AND	NEGAT	IVE CIRCUIT MEASUREMENTS (Amps) Anode Shunt Size =									0.01 Ω	1
ND"	CIRCUIT	1	2	3	4	5	6	7	8	9	10	11	12	тот	AL
	ANODE (+)	0.45	0.56	0.47	0.65	0.68	3							2.81	Amps
	STRUCTURE (-)														Amps
,															_

Mark this box if rectifier was not changed from the "AS FOUND" settings.

- 2.72 * 0.8 = 2.2 amps
- Purpose is so the tank owner / monthly guy knows when to call.

60-DAY RECORD OF RECTIFIER OPERATION The form may be utilized to downer that it was confirmed the rectifier was receiving power and is "timed-or". I try control is taken to mean that it was confirmed the rectifier was receiving power and is "timed-or". I try control is taken to mean that it was confirmed the rectifier was receiving power and is "timed-or". I try controls requires "should skot record the output voltage, ange-age and the number of hours indicated on the meter. INTE design controls requires the provide adequate to the moter. UST OWNER UST OWNER UST ACLUITY NAME:: ADDRESS: Contact a qualified person to investigate if the observed amperage falls below this value Note:: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test was performed on:		IMP		D CURR		THODIC	PROTECT		M	
The design corrosion engineer should specify the minimum amperage required to provide adequate cathodic protection. UST OWNER UST FACILITY NAME: NAME: ID # ADDRESS: CITY: STATE: MINIMUM DESIGN AMPERAGE The minimum amperage needed to provide adequate cathodic protection is: amps Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on: with the system operating at amps IMPRESSED CURRENT RECTIFIER DATA Rectifier Manufacturer: Rectifier Manufacturer: Rectifier Manufacturer: Rectifier Manufacturer: Rectifier Manufacturer: Rectifier Model: COMMENTS COMMENTS	 Checked f 	or operation is tak	document th en to mean t	at the catho that it was c	odic protection	on system r e rectifier w	ectifier is checked as receiving powe	d for operation a er and is "turned	-on".	
NAME: NAME: ID # ADDRESS: ADDRESS: COUNTY: CITY: STATE: CITY: COUNTY: MINIMUM DESIGN AMPERAGE The minimum amperage needed to provide adequate cathodic protection is: amps Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on:	-				-	-				
ADDRESS: ADDRESS: ADDRESS: CITY: STATE: CITY: MINIMUM DESIGN AMPERAGE The minimum amperage needed to provide adequate cathodic protection is: amps Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on:		UST O	WNER				l	JST FACILIT	Y	
CITY: STATE: CITY: COUNTY: MINIMUM DESIGN AMPERAGE The minimum amperage needed to provide adequate cathodic protection is: amps Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on:	NAME:				N	AME:			10	D#
MINIMUM DESIGN AMPERAGE The minimum amperage needed to provide adequate cathodic protection is: amps Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on: with the system operating at amps IMPRESSED CURRENT RECTIFIER DATA Rectifier Manufacturer: Nated DC Output: VOLTS AMPS Rectifier Manufacturer: Rated DC Output: VOLTS AMPS Rectifier Manufacturer: Rated DC Output: VOLTS AMPS DATE RECTIFIER OPERATION	ADDRESS:				AI	DDRESS:				
The minimum amperage needed to provide adequate cathodic protection is: amps Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on:	CITY:			STATE:	CI	TY:		COUNTY:		
Contact a qualified person to investigate if the observed amperage falls below this value Note: Relatively small variations in the rectifier amperage are normal. If there is no minimum amperage specified, contact a qualified person to investigate if the observed amperage varies by 20% or more from the last passing test amperage. The last passing test was performed on:				MININ	NUM DE	SIGN A	MPERAGE			
The last passing test was performed on: with the system operating at amps IMPRESSED CURRENT RECTIFIER DATA Rectifier Manufacturer: Rated DC Output: VOLTSAMPS Rectifier Model: Rectifier Serial Number: 60-DAY LOG OF RECTIFIER OPERATION DATE RECTIFIER TAP SETTINGS DC OUTPUT HOUR INSPECTOR COMMENTS	Contac <u>Note:</u> Relat specified, c	ct a qualified ively small var ontact a qualif	d person riations in ied perso	to inve the rectif	stigate i fier ampe	f the ob rage are	served amp normal. If the	oerage falls are is no mini	below mum am	this value
Rectifier Manufacturer: Rated DC Output: VOLTS AMPS Rectifier Model: Rectifier Serial Number: AMPS 60-DAY LOG OF RECTIFIER OPERATION DATE RECTIFIER TAP SETTINGS DC OUTPUT HOUR INSPECTOR COMMENTS				d on:			with the s	ystem operat	ting at _	amps
Rectifier Model: Rectifier Serial Number: Interest of output: Output: Interest of output: Interest output:				MPRESS	ED CURF	RENT RE	ECTIFIER DA	ATA		
60-DAY LOG OF RECTIFIER OPERATION	Rectifier Manuf	iacturer:				Rated	DC Output:	v	OLTS	AMPS
DATE RECTIFIER TAP SETTINGS DC OUTPUT HOUR INSPECTOR COMMENTS	Rectifier Model	:				Rectif	ier Serial Number	:		
INSPECTOR COMMENTS				60-DAY	LOG OF R	ECTIFIE	R OPERATION	1		
INSPECTOR COMMENTS	DATE	RECTIFIER	TTINGS	DC O	UTPUT	HOUR	INCREATOR			
Image: series of the series	INSPECTED		D OND	FINE	VOLTS	AMPS			0	OMMENTS
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Proposed form

- We want your feedback... Think about it
- Why change?
 - Varying manufactures and test procedures
 - In general, what your trying to determine is the same.
 - Many misconceptions and misunderstandings about testing

All ALLDs (both n	ANNUAL A utilized to document fur nechanical and electroni	nctionali c) must	ty testir be test	ng of auto ed at inst	matic line allation a	e leak det nd once	tectors (A every 12	ALLD's). months.		Date	Test Cond	duct
 All testing must for 	UST Facility	Q Proce	dure fo	orTesting	Automat	ic Line Le			ucting 1	estin	n	
acility Name	ostrucinty	MDE	Q Facilit	y ID #	Tester's	Name	1 6130	ii conu	ucung i	esung	-	_
hysical Address		_			Compar	ıy						
City			State MS	MDEQ	Certificatio	n#			Expira	tion Date		
IST Owner				1.1.0	Tester's	Signature				Date		
	S	ystem	Inform	nation 8	Testing	g Requi	rements	8				
est Equipment Used				Reason for Test	Ar Ar	nnual	New In	stallation	Othe	r		
			Line #/	Product	Line # /	Product	Line #/	Product	Line #/F	roduct	Line #/ F	Prod
Line N	umber / Product										<u> </u>	
Type of Pipe (St	eel, FRP, Thermoplastic)										
Pipe Diame	eter / Length of Pipe			/				/	/			
Type of ALLD: I	Electronic or Mechanical		Med	h 🗖 Elec	Mech	Elec	Mech	n 🗖 Elec	Mech	Elec	Mech	
ALLD	Manufacturer											
AI	LD Model											
ALLD	Serial Number											
Al	LD is new		Yes	No No	Yes	No	Yes	No No	Yes	No	Yes	
STP cycl	es on/off properly		Yes	No No	Yes	No 🛛	Yes	No No	Yes	No 🗆	Yes	
		Te	st Equ	ipment	Orifice (Calibrat	ion					
STP Full Ope	erating Pressure (psi)											
Line pressure reg	ulated to 10 psi (optiona	d)	Yes	No	Yes	No	Yes	No	Yes	No No	Yes	
Volume (ml) me	asured over 60 seconds											_
_			Me	echanica	ALLD	Test	1		1		-	
	Example: Dispenser 7/8)		_		_							
) when line pressure is a	zero	Yes	No	Yes	No	Yes	No	Yes	No No	Yes	
-	ing Time (seconds)										<u> </u>	
	g Pressure (psi)										<u> </u>	
	Holding Pressure (psi)										<u> </u>	
	y / Bleedback (ml)										<u> </u>	
	Metering Pressure for 60 est time) with leak simul		Yes	No No	Yes	No 🗆	Yes	No 🗆	Yes	No I	Yes	
	ed over 60 second test pe										<u> </u>	
Leak Rate (oph) equ	ivalent to volume meas	ured										
			E	ectronic	ALLD	Test	•		·			
Set-up p	arameters correct		Yes	No No	Yes	No No	Yes	No	Yes	No No	Yes	
Simulated	leak causes alarm		Yes	No No	Yes	No No	Yes	No No	Yes	No	Yes	
Simulated leak cause	ses STP shutdown (option	nal)	Yes	No No	C Yes	No No	Yes	No No	Yes	No 🗆	Yes	
Pa	iss / Fail			Test	Results							
							ļ				L	

Old MDEQ form

- Leak Test Pressure was meant to document "calibration"
- To confirm the hole size / leak rate used.
 - To confusing. Not clear.
- Need to hit the reset button.
- Clarify:
 - What matters for the test?
 - What do you have to do?
 - What is the goal?

Type of Pipe (Steel, FF FRP	P, Thermoplastic)		Pipe Diameter 2*			Approx. Length 40'	of Pipe
Reason for Test:	Annual	New Installation	on 🗀	Troubleshooting	Leak Inves	tigation	Other
All testing	must follow the	attached "MDE	Q Procedure	for Testing A	utomatic Lin	e Leak Detec	tors"
De	ucription	Une #/ Product	Line # Product	Line #/ Product	Line # Product	Line #/ Product	Line # Produ
Line Nut	sber / Product	UNL.#1	SUPER	UNL #2			
ALLDA	Nanufacturer	VEEDER ROOT	VAPORLESS	VEEDER ROOT		-	
ALL	D Model	FXIV	VAPORLESS	FXIV			
ALLD S	erial Number	30214-1227	N/A	20112-1164			
ALLD is r	new (yes / no)	NO	NO	NO	8	1	
STP cycles on/of	property (Yes or No)	YES	YES	YES			
TEL CONTRACTOR	and the second second	Mech	anical ALLD To	st Data	the second second		1997 C.
Full Pump	Pressure (psi)	26	26	25			
Holding P	ressure (psi)	14	24	11	1		
Resiliency /	Bleedback (ml)	50	75	50			
Metering p	ressure (psi)	10	19	10			
Opening Tir	ne (seconds)	1	4	1	2		
Leak Test i	ressure (psi)	45	45	45			
Loak Test	Volume (ml)	189	189	189	6	-	
Test Leak	Rate (sph)	3GAL/HR	3GAL/HR	3GAL/HR	7		
the second second	Sector Manager / 1	Elect	ronic ALLD Ter	t Data	10000	and the second	A DECEMBER
Set-up parameters	correct (yes or no)						
Simulated leak of Visual alar	auses audible or m (yes/no)		1				
Simulated leal shutdown (y	causes pump ts/ho or N/A)						
Number of tes	t cycles before hutdown occurs						
-	and the second second	Contraction of the local division of the loc	TEST RESULT			and the second	The later of
PASS	/FAIL	PASS	PASS	PASS			

Testing equipment

Petrotite



Vaporless



TSC 1000

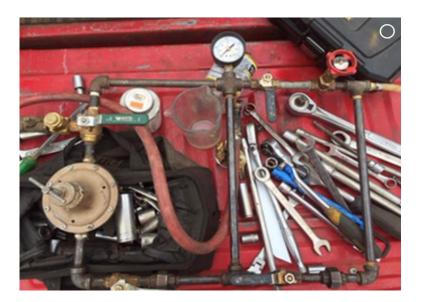


Testing equipment

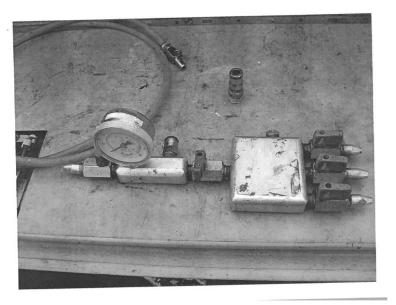
Red Jacket

Red Jacket FX Tester

Estabrooks

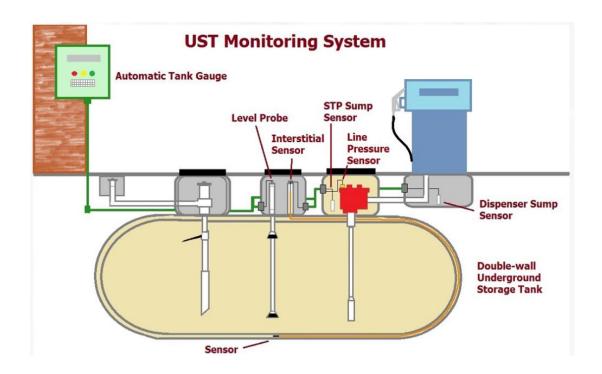






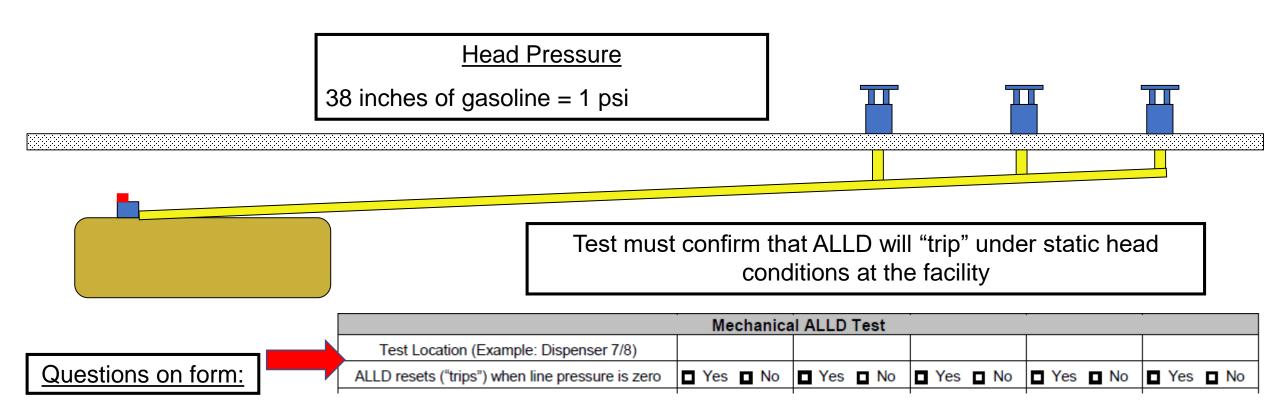
Testing equipment

- Each have different procedures
- What is the same?
 - Test location
 - The hole used to simulate 3 gph @ 10 psi
 - Calibration step to ensure hole is right size
 - Metering pressure of MLLD (varies among LLD manufactures)



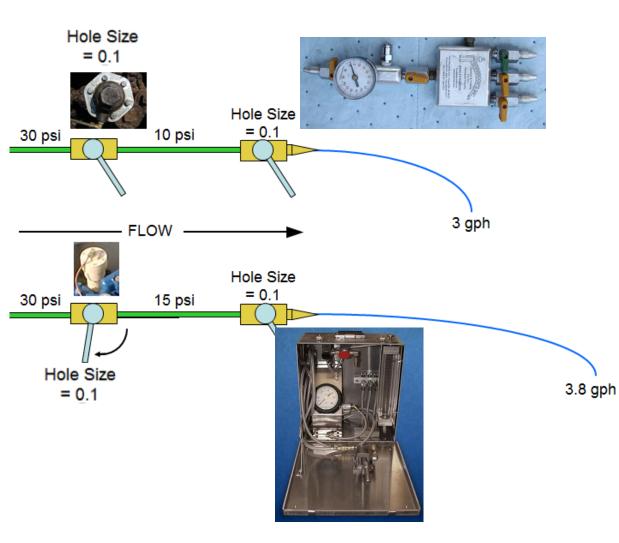
Why must test be conducted with ALLD installed in UST system and simulated leak created at the highest dispenser?

- Some mechanical ALLDs will not "trip" unless line pressure drops to 1-5 psi
- Not all piping is sloped back to the tank.
- Testing should be done at furthest dispenser. Furthest Diesel Satellite dispenser.



Annual LLD Test

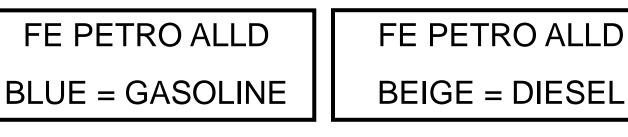
The Concept



- 10 psi @ 3 gph is nothing more than a hole size.
- The hole size in your test equipment models the hole size in the LLD.
- Hole in MLLD is < or = hole size in test equipment. (slow flow)
- Hole size is different depending on viscosity of fuel (diesel versus gas)
- Pressure behind the hole determines leak rate. (Leak rate may not be 3 gph)
- What your detecting is:
 - Will it detect this size hole? A 3 gph @ 10 psi sized hole?
- Main step is calibrating your hole size.

Annual LLD Test

The Hole Size – Mechanical LLDs







- Hole size is different for gas & diesel LLDs.
- Commonly you can't tell what you have. (Corrosion. Model #s unreadable.)
- Your test should show if it's an issue. That is why:
 - Calibration is important. Setting the right hole size.
 - Either it will see your leak & stay in slow flow, or it wont.

Calibration step

- Is the hole in your test equipment the right size?
- How do you tell?
- Do you need a regulator?
 - Not if your leak rate is correct.
 - Unless manufacturer requires you to.



MISSISSIPPI DEP ANNUAL AUT									11		
 This form may be utilized to document functio All ALLDs (both mechanical and electronic) m 	nali ust	ty testi be test	ng of auto ted at inst	matic line allation a	e leak de nd once	tectors (A every 12	ALLD's). months.		Date	Test Con	ducted:
	OCE	dure fo	or Testing	Automat	ic Line L			unting T	ooting	•	
	MDE	Q Facili	y ID #	Tester's	Name	Perso	n Cona	ucung i	esung		
Physical Address				Compa	ny						
City County			State MS	MDEQ	Certificatio	n#			Expira	tion Date	
JST Owner				Tester's	Signature				Date		
	em	Infor	mation &	Testin	g Requi	rement	s				
Fest Equipment Used	_		Reason for Test		nual	New In	stallation	Other	r		
		Line # I	Product	Line # /	Product	Line #/	Product	Line # / P	roduct	Line #/	Product
Line Number / Product	\downarrow										
Type of Pipe (Steel, FRP, Thermoplastic)											
Pipe Diameter / Length of Pipe			/				/	/			
Type of ALLD: Electronic or Mechanical		Med	h 🗖 Elec	Mech	Elec	Mech	h 🗖 Elec	Mech	Elec	Mech	Elec
ALLD Manufacturer											
ALLD Model											
ALLD Serial Number											
ALLD is new		Yes	No No	Yes	No	Yes	No No	Yes	No	Yes	No
STP cycles on/off properly		Yes	No	Yes	No No	Yes	No No	Yes	No	Yes	No No
	Te	st Equ	ipment	Orifice	Calibrat	ion					
STP Full Operating Pressure (psi)											
Line pressure regulated to 10 psi (optional)		Yes	No No	Yes	No No	Yes	No No	Yes	No	Yes	No No
Volume (ml) measured over 60 seconds											
	_	Me	echanica	ALLD	Test	1		1		1	
Test Location (Example: Dispenser 7/8)											
ALLD resets ("trips") when line pressure is zero		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
ALLD Opening Time (seconds)											
Metering Pressure (psi)											
Check Valve Holding Pressure (psi)											
Resiliency / Bleedback (ml)											
Line remains at Metering Pressure for 60	Ī	Yes	No No	Yes	□ No	T Yes	No	Yes	No	Yes	D No
	-	_	-	-	-	-	-	-	_	-	_
	+										
Leak rate (gpn) equivalent to volume measured		F	lectronic		Teet			I			
Set-up parameters correct	Т						D No	T Yes	No		D No.
	-										
entrative rear eases off anatomic (optional)		_ res				i res				i res	
Pass / Fail	Τ										
	-			I		I				I	
PRODUCED BY THE MISSISSIPPI DEPARTM											
	This form may be utilized to document functio All ALLDs (both mechanical and electronic) m All testing must follow the attached "MDEQ Pi UST Facility acility Name 'hysical Address 'thy County County Syst 'strowner Syst iest Equipment Used Line Number / Product Type of Pipe (Steel, FRP, Thermoplastic) Pipe Diameter / Length of Pipe Type of ALLD: Electronic or Mechanical ALLD Manufacturer ALLD Model ALLD Serial Number ALLD Strip of Pipe (Steel to 10 psi (optional) Volume (ml) measured over 60 seconds Test Location (Example: Dispenser 7/8) ALLD Opening Time (seconds) Metering Pressure (psi) Check Valve Holding Pressure (psi) Check Valve Holding Pressure (psi) Resiliency / Bleedback (ml) Line remains at Metering Pressure for 60 seconds (minimum test time) with leak simulated Volume (ml) measured over 60 second test period Set-up parameters correct Simulated leak causes alarm Simulated leak causes alarm	This form may be utilized to document functionali All ALLDs (both mechanical and electronic) must All testing must follow the attached "MDEQ Proce UST Facility acility Name MDE "Instant and electronic) must All testing must follow the attached "MDEQ Proce UST Facility acility Name MDE "Instant and electronic) must "Instant and electronic) must "Instant and electronic) must "Instant and electronic) must "Instant and electronic) UST Facility acility Name MDE "Instant and electronic) "Instant and electronic) "Instant and electronic) "Instant and electronic) Pipe Diameter / Product Type of Pipe (Steel, FRP, Thermoplastic) Pipe Diameter / Length of Pipe Type of ALLD: Electronic or Mechanical ALLD Manufacturer ALLD Model ALLD Serial Number ALLD Serial Number ALLD Serial Number Te STP cycles on/off properly Te STP Full Operating Pressure (psi) Line pressure regulated to 10 psi (optional) Volume (ml) measured over 60 seconds Test Location (Example: Dispenser 7/8) ALLD Opening Time (seconds) Metering Pressure (psi) Check Valve Holding Pressure (psi) Resiliency / Bleedback (ml) Line remains at Metering Pressure for 60 seconds (minimum test time) with leak simulated Volume (ml) measured over 60 second test period Leak Rate (gph) equivalent to volume measured Set-up parameters correct Simulated leak causes alarm Sim	This form may be utilized to document functionality testii All ALLDs (both mechanical and electronic) must be test All testing must follow the attached "MDEQ Procedure fo UST Facility acility Name MDEQ Facili MDEQ Facili Physical Address County If Owner System Inform System Inform Extended to the stack of the sta	This form may be utilized to document functionality testing of auto All ALDS (both mechanical and electronic) must be tested at inst All testina must follow the attached "MDEQ Procedure for Testing UST Facility MDEQ Facility ID # hysical Address System Information 8 rest System Information 8 Reason for Test Line #/ Product Line Mumber / Product Line Mumber / Product Type of Pipe (Steel, FRP, Thermoplastic) Pipe Diameter / Length of Pipe ALLD Manufacturer ALLD Manufacturer ALLD Model ALLD Serial Number ALLD Serial Number ALLD Serial Number STP cycles on/off properly Yes _ No STP cycles on/off properly Yes _ No STP Full Operating Pressure (psi) Line pressure regulated to 10 psi (optional) Yes _ No ALLD Opening Time (seconds) Metering Pressure (psi) Line remains at Metering Pressure for 60 Seconds (mi) Line remains at Metering Pressure for 60 Seconds (mi) Line remains at Metering Pressure for 60 Seconds (mi) Line remains at Metering Pressure for 60 Seconds (mi) Line remains at Metering Pressure for 60 Seconds (mi) Line remains at Metering Pressure for 60 Seconds (mi) Line remains at Metering Pressure for 60 Seconds (minimum test time) with leak simulated Volume (mi) measured over 60 second test period Leak Rate (gph) equivalent to volume measured Simulated leak causes alarm Yes _ No Simulated leak causes STP shutdown (optional) Yes _ No Simulated leak causes STP shutdown (optional) Yes _ No Simulated l	This form may be utilized to document functionality testing of automatic line All ALDs (both mechanical and electronic) must be tested at installation a All testing must follow the attached "MDEQ Procedure for Testing Automat UST Facility acity Name MDEQ Facility Address Comparing the attached "MDEQ Procedure for Testing Automation State MMEQ Facility MDEQ Facility ID # Tester's Tester's System Information & Testing Tester's Type of Pipe (Steel, FRP, Thermoplastic) Pipe Diameter / Length of Pipe // // Type of ALLD: Electronic or Mechanical Mech Elec Mech ALLD Manufacturer ALLD Manufacturer ALLD Manufacturer ALLD Serial Number Test Equipment Orifice STP cycles on/off properly Yes _ No _ Yes STP cycles on/off properly Test Equipment Orifice STP Full Operating Pressure (psi) Line pressure regulated to 10 psi (optional) Mechanical ALLD Test Location (Example: Dispenser 7/8) ALLD Opening Time (seconds) Metering Pressure (psi) Check Valve Holding Pressure (psi) Resiliency / Bleedback (mI) Line remains at Metering Pressure for 60 seconds (minimum test time) with leak simulated Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _ Yes Simulated leak causes alarm Yes _ No _	This form may be utilized to document functionality testing of automatic line leak dei All ALDs (both mechanical and electronic) must be tested at installation and once - All testing must follow the attached "NDEQ Procedure for Testing Automatic Line Lo UST Facility acity Name MDEQ Facility ID # Tester's Name thysical Address Company Bity County State MDEQ Certification MDEQ Certification MS Strowner Tester's Signature State MDEQ Certification for Test in Annual [Strowner Reason for Test in Annual [Annual [Annual [Line # / Product Reason for Test in Annual [Annual [Type of Pipe (Steel, FRP, Thermoplastic) // // Pipe Diameter / Length of Pipe // // ALLD Break Intervention or Mechanical Mech = Elec Mech = Elec ALLD Nodel // // // ALLD Nodel // // // STP cycles on/off property Yes No Yes No Yes No STP Full Operating Pressure (psi) // // // Line pressure regulated to 10 psi (optional) Yes No Yes No Yes No Volume (mI) measured over 60 seconds // Yes No Yes No No ALLD Dening Time (seconds) // <th>This form may be utilized to document functionality testing of automatic line leak detectors (All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 All testine must follow the attached "MDEQ Procedure for Testina Automatic Line Leak Dete UST Facility Person acity Name MDEQ Facility Person Southy Name MDEQ Facility MDEQ Facility Person Support State MDEQ Facility MDEQ Certification # MS State MDEQ Certification # System Information & Testing Requirement set Equipment Used System Information & Testing Requirement Est Equipment Used System Information & Testing Requirement System Information System System Information System Information System Inform</th> <th>This form may be utilized to document functionality testing of automatic line tesk detectors (ALLD's). All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 months. All testion must follow the attached "MDEQ Procedure for Testino Automatic Line Leak Detectors". UST Facility Person Cond State months attached "MDEQ Pacity ID # Tester's Name Tester's Name County State County State State County State States Company County State States Company County State States Company County States States Company County States States Company County States States Company County States States States Company County States States States Company States States Company States States<!--</th--><th>All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 months. All testing must follow the attached MDEQ Procedure for Testing Automatic Line Leak Detectors' Yester's Name MDEQ Facility MDEQ Facility MDEQ Facility MDEQ Certification # MS State MDEQ Certification # MS State System Information & Testing Requirements System Information S</th><th>This form may be utilized to document functionality testing of automatic line leak detectors (ALLDs), All ALLOs (both mechanical and electorici) must be tested at installation and once every 12 morths. All testinn must follow the attached "MDEO Procedure for Testino Automatic Line Leak Detectors' UST Facility MDEO Parling D# Tester's Name</th><th></th></th>	This form may be utilized to document functionality testing of automatic line leak detectors (All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 All testine must follow the attached "MDEQ Procedure for Testina Automatic Line Leak Dete UST Facility Person acity Name MDEQ Facility Person Southy Name MDEQ Facility MDEQ Facility Person Support State MDEQ Facility MDEQ Certification # MS State MDEQ Certification # System Information & Testing Requirement set Equipment Used System Information & Testing Requirement Est Equipment Used System Information & Testing Requirement System Information System System Information System Information System Inform	This form may be utilized to document functionality testing of automatic line tesk detectors (ALLD's). All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 months. All testion must follow the attached "MDEQ Procedure for Testino Automatic Line Leak Detectors". UST Facility Person Cond State months attached "MDEQ Pacity ID # Tester's Name Tester's Name County State County State State County State States Company County State States Company County State States Company County States States Company County States States Company County States States Company County States States States Company County States States States Company States States Company States </th <th>All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 months. All testing must follow the attached MDEQ Procedure for Testing Automatic Line Leak Detectors' Yester's Name MDEQ Facility MDEQ Facility MDEQ Facility MDEQ Certification # MS State MDEQ Certification # MS State System Information & Testing Requirements System Information S</th> <th>This form may be utilized to document functionality testing of automatic line leak detectors (ALLDs), All ALLOs (both mechanical and electorici) must be tested at installation and once every 12 morths. All testinn must follow the attached "MDEO Procedure for Testino Automatic Line Leak Detectors' UST Facility MDEO Parling D# Tester's Name</th> <th></th>	All ALLDs (both mechanical and electronic) must be tested at installation and once every 12 months. 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Calibration step to ensure hole is right size Hole size not adjustable



- For some test equipment you cannot change hole size.
- You still have to ensure the right size hole is used.
- Still have to calibrate the hole.
 - Ensure no trapped air.
 - Correct leak rate is simulated

Calibration step to ensure hole is right size Hole size adjustable





- For some test equipment you have to manually set the hole size.
- Must calibrate the hole.
- Hole size is different for gas & diesel.
- You can't just set the hole size on these and use them at every site

3 gph @ 10 psi is standard (hole size) All of these are equivalent to it.

Your leak "Volume" verifies the hole is correct size.

Table 1 - V	olume that must			ph @ 10 psi:	e name to be eq	uivalent to a
Line Pressure	15 seconds	60 seconds		Line Pressure	15 seconds	60 seconds
5 psi	33 ml	134 ml		30 psi	82 ml	328 ml
6 psi	37 ml	147 ml		31 psi	83 ml	333 ml
7 psi	40 m1	158 ml		32 psi	85 ml	338 ml
8 psi	42 ml	169 ml		33 psi	86 ml	344 ml
9 psi	45 ml	179 ml		34 psi	87 ml	349 ml
10 psi	47 ml	189 ml		35 psi	89 ml	354 ml
11 psi	50 ml	198 ml		36 psi	90 ml	359 ml
12 psi	52 ml	207 ml		37 psi	91 ml	364 ml
13 psi	54 ml	216 ml		38 psi	92 ml	369 ml
14 psi	56 ml	224 ml		39 psi	94 ml	374 ml
15 psi	58 ml	232 ml		40 psi	95 ml	378 ml
16 psi	60 ml	239 ml		41 psi	96 ml	383 ml
17 psi	62 ml	247 ml		42 psi	97 ml	388 ml
18 psi	64 ml	254 ml		43 psi	98 ml	392 ml
19 psi	65 ml	261 ml		44 psi	99 ml	397 ml
20 psi	67 ml	268 ml		45 psi	100 ml	401 ml
21 psi	69 ml	274 ml		46 psi	102 ml	406 ml
22 psi	70 ml	281 ml		47 psi	103 ml	410 ml
23 psi	72 ml	287 ml		48 psi	104 ml	415 ml
24 psi	73 ml	293 ml		49 psi	105 ml	419 ml
25 psi	75 ml	299 ml		50 psi	106 ml	423 ml
26 psi	76 ml	305 ml		51 psi	107 ml	427 ml
27 psi	78 ml	311 ml		52 psi	108 ml	431 ml
28 psi	79 ml	317 ml		53 psi	109 ml	436 ml
29 psi	81 ml	322 ml		54 psi	110 ml	440 ml
	ust size of test ap	paratus leak orifi	ce u		flow rate is achi	eved

Leak Rate is Nothing but a number.

Table 2 – Conversion of leak rate from milliliters per minute (ml/min) to gallons per hour (gph)											
Leak Rate	Leak Rate		Leak Rate	Leak Rate		Leak Rate	Leak Rate				
(m1/min)	(gph)		(ml/min)	(gph)		(ml/min)	(gph)				
134	2.1		281	4.5		374	5.9				
147	2.3		287	4.6		378	6.0				
158	2.5		293	4.7		383	6.1				
169	2.7		299	4.7		388	6.2				
179	2.8		305	4.8		392	6.2				
189	3.0		311	4.9		397	6.3				
198	3.1		317	5.0		401	6.4				
207	3.3		322	5.1		406	6.4				
216	3.4		328	5.2		410	6.5				
224	3.5		333	5.3		415	6.6				
232	3.7		338	5.4		419	6.6				
239	3.8		344	5.5		423	6.7				
247	3.9		349	5.5		427	6.8				
254	4.0		354	5.6		431	6.8				
261	4.1		359	5.7		436	6.9				
268	4.2		364	5.8		440	7.0				
274	4.3		369	5.9		445	7.1				
	Note: 1 gallon per hour = 63.06 milliliters per minute										

You can calibrate the orifice using:

- Full pump pressure or
- Regulated pressure (pressure you regulate down to)

Calibration step

- With equipment hooked up.
- STP "ON" what is full pump pressure?
 30 psi.
- Open your test equipment. Start leak.
 What is your leak volume in 60 sec?
 - At 30 psi it should be < or = 328 mL (previous slide / tables)
- If it is, then your hole is set.
- You matched what is on the chart.
- This applies to both MLLDs & PLLDs

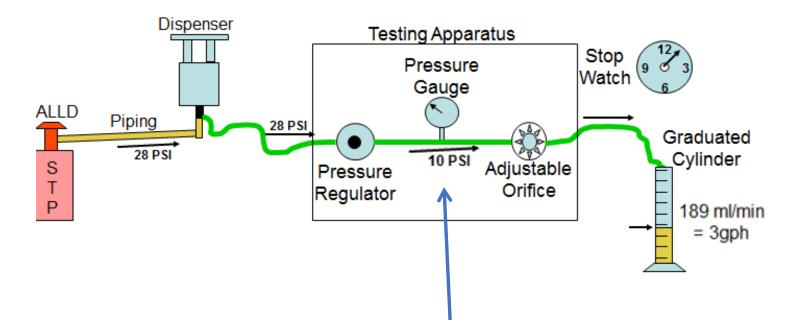
MISSISSIPPI DEI						Y					
				CTOR TEST							
This form may be utilized to document funct	-	-			D	ate Test Conducted:					
 All ALLDs (both mechanical and electronic) All testing must follow the attached "MDEQ 				-							
UST Facility		1 Course		Person Cond	ucting Tes	tina					
Facility Name	MDEQ Facility	/ID#									
Physical Address			Company								
City County		State MS	MDEQ Certificatio	n#	E	xpiration Date					
UST Owner			Tester's Signature		D	ate					
System Information & Testing Requirements											
Test Equipment Used Reason for Test Annual New Installation Other											
	Line #/	Product	Line # / Product	Line # / Product	Line # / Prod	uct Line # / Product					
Line Number / Product											
Type of Pipe (Steel, FRP, Thermoplastic)											
Pipe Diameter / Length of Pipe		/	/	/	/	/					
Type of ALLD: Electronic or Mechanical	Mech	Elec	Mech Elec	Mech Elec	Mech 🛛 E	ilec Mech Elec					
ALLD Manufacturer											
ALLD Model											
ALLD Serial Number											
ALLD is new	Yes	No No	Yes No	Yes No	□ Yes □ N	No 🛛 Yes 🗖 No					
STP cycles on/off properly	Yes	No No	□ Yes □ No	□ Yes □ No	Yes D	No 🛛 Yes 🗆 No					
	Test Equ	ipment	Orifice Calibrat	ion							
STP Full Operating Pressure (psi)											
Line pressure regulated to 10 psi (optional)	Yes	No No	🗆 Yes 🗖 No	🗆 Yes 🗖 No	🗆 Yes 🗖 N	No 🛛 Yes 🗆 No					
Volume (ml) measured over 60 seconds											
	Me	chanica	I ALLD Test	1	1						
Test Location (Example: Dispenser 7/8)											
ALLD resets ("trips") when line pressure is zer	ro 🛛 Yes	No	Yes 🛛 No	🛛 Yes 🗖 No	□ Yes □ N	No 🛛 Yes 🗖 No					
ALLD Opening Time (seconds)											
Metering Pressure (psi)											
Check Valve Holding Pressure (psi)											
Resiliency / Bleedback (ml)											
Line remains at Metering Pressure for 60 seconds (minimum test time) with leak simulate	ed Ves	No 🛛	□Yes □No	Ves No	□ Yes □ N	No Yes No					
Volume (ml) measured over 60 second test period	xd										
Leak Rate (gph) equivalent to volume measure	ed										
			ALLD Test	1	1						
Set-up parameters correct	Yes			Yes No	Yes I	No 🛛 Yes 🗖 No					
Simulated leak causes alarm	Yes	No No	Yes No	Ves No	Yes 1	No 🛛 Yes 🗖 No					
Simulated leak causes STP shutdown (optional) 🛛 Yes		Yes No	Yes No	Yes I	No Yes No					
Dees / Esil		Test	Results	1							
Pass / Fail											
Comments: PRODUCED BY THE MISSISSIPPI DEPART PO BOX 2281 JACKSON, MS 39225 PI						UST BRANCH 2/20					

Calibration step with regulator

- Some manufactures may require you to regulate down to 10 psi.
- STP "ON" what is full pump pressure?
 30 psi.
- Open your test equipment. Start leak. Regulate pressure down to 10 psi. What is your leak volume in 60 sec?
 - At 10 psi it should be < or = 189 mL (previous tables)
- If it is, then your hole is set.
- You matched what is on the chart.
- This applies to both MLLDs & PLLDs

	AL AUT	omati	C LINE	LEAK	DETE	CTOR	TEST				
 This form may be utilized to docum All ALLDs (both mechanical and ele 		-	-						Date	Test Con	ducte
All testing must follow the attached	"MDEQ Pro					eak Dete	ctors"				
UST Faci				Testado	Name	Perso	n Cond	ucting]	Testing	9	
Facility Name	M	DEQ Facilit	y ID #	Tester's	Name						
Physical Address				Compan	iy						
City County			State MS	MDEQ (Certification	n #			Expira	tion Date	
UST Owner			•	Tester's	Signature				Date		
	Syste	m Inforr	nation 8	Testing	g Requi	rement	8				
Test Equipment Used			Reason for Test		nual	New In	stallation	Othe	er		
		Line #/	Product	Line # /	Product	Line #/	Product	Line #/I	Product	Line #/	Produ
Line Number / Product											
Type of Pipe (Steel, FRP, Thermo	plastic)		,		,		,				
Pipe Diameter / Length of Pip		/				/	/				
Type of ALLD: Electronic or Mech	Mecl	n 🗖 Elec	Mech	Elec	Mech Mech	n 🗖 Elec	Mech	Elec	Mech		
ALLD Manufacturer											
ALLD Model											
ALLD Serial Number											
ALLD is new							Yes				
STP cycles on/off properly											
STP Full Operating Pressure (est Equ	Ipment	Unifice	alibrat	ion		1			_
Line pressure regulated to 10 psi (o			No No	Yes	D No		D No.	Yes	D No.	Yes	
Volume (ml) measured over 60 se		L Tes		165							
Volume (m) measured over ou se		Me	chanica	ALLD	Test			1		1	
Test Location (Example: Dispense	er 7/8)										
ALLD resets ("trips") when line press	ure is zero	Yes	No No	Yes	No	Yes	No	Yes	No No	Yes	
ALLD Opening Time (second	s)										
Metering Pressure (psi)											
Check Valve Holding Pressure	(psi)										
Resiliency / Bleedback (ml)											
Line remains at Metering Pressure		□ Yes	No No	Yes	□ No	□ Yes	No No	Yes	No	□ Yes	
seconds (minimum test time) with leal Volume (ml) measured over 60 second		-	_		_	<u> </u>	_		-	<u> </u>	_
Leak Rate (gph) equivalent to volume											
concreate (gpir) equivalent to volume	measured	E	ectronic	ALLD	Test	-				-	
Set-up parameters correct						Yes	No No	Yes	No No	Yes	
Simulated leak causes alarn	n							Yes			
Simulated leak causes STP shutdown	(optional)							Yes			
		-		Results		1		1		1	
Pass / Fail											
Comments:											
PRODUCED BY THE MISSISSIPP	DEPARTME	INT OF E	VIRONM	ENTAL QU	ALITY, O	FFICE OF	POLLUT	ION CONT	ROL, US	T BRANCH	1

Calibration step using pressure regulator



- Using inline pressure regulator adjust to 10 psi.
- Next adjust orifice (hole) until your getting ~189 mL/min.
- Your hole is now set. DO not adjust it anymore.
- Remove pressure regulator. Perform LLD test.

Calibration step

- Whether you calibrate at "Full Pump" or another pressure does NOT matter as long as:
 - Leak volume matches what's on chart for that pressure.
- It is much easier to calibrate using "Full Pump" pressure.

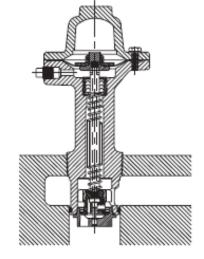
Table 1 - V	Table 1 - Volume that must be discharged within indicated time frame to be equivalent to a leak rate of 3 gph @ 10 psi:											
Line Pressure	15 seconds	60 seconds		Line Pressure	15 seconds	60 seconds						
5 psi	33 ml	134 ml		30 psi	82 ml	328 ml						
6 psi	37 ml	147 ml		31 psi	83 ml	333 ml						
7 psi	40 ml	158 ml		32 psi	85 ml	338 ml						
8 psi	42 ml	169 ml		33 psi	86 ml	344 ml						
9 psi	45 ml	179 ml		34 psi	87 ml	349 ml						
10 psi	47 ml	189 ml		35 psi	89 ml	354 ml						
11 psi	50 ml	198 ml		36 psi	90 ml	359 ml						
12 psi	52 ml	207 ml		37 psi	91 ml	364 ml						
13 psi	54 ml	216 ml		38 psi	92 ml	369 ml						
14 psi	56 ml	224 ml		39 psi	94 ml	374 ml						
15 psi	58 ml	232 ml		40 psi	95 ml	378 ml						
16 psi	60 ml	239 ml		41 psi	96 ml	383 ml						

ANNUAL AUT This form may be utilized to document functions								Date	Test Con	duct
 All ALLDs (both mechanical and electronic) must 										
 All testing must follow the attached "MDEQ Pro UST Facility 	cedure fo	r Testina	Automat	ic Line Le			ucting	Tootin		
	DEQ Facility	y ID #	Tester's	Name	reisu	I COIIG	ucung	resung		
Physical Address			Compar	ny						
City County		State	MDEQ	Certification	n#			Expira	tion Date	
		MS						_		
JST Owner			Tester's	Signature				Date		
Susta	n Inforn	nation 8	Teeting	a Doqui	romonte					_
Fest Equipment Used		Reason					_			_
		for Test	Ar	nnual	New In:	stallation	Othe	er		
	Line #/	Product	Line # /	Product	Line #/	Product	Line #/	Product	Line #/	Proc
Line Number / Product										
Type of Pipe (Steel, FRP, Thermoplastic)		,				,				_
Pipe Diameter / Length of Pipe							/		/	
Type of ALLD: Electronic or Mechanical	Mech Mech	Elec	Mech Mech	Elec	Mech Mech	Elec	Mech	Elec	Mech	
ALLD Manufacturer										
ALLD Model										
ALLD Serial Number										
ALLD is new	Yes	No	Yes	No	Yes	No	Yes	No	Yes	
STP cycles on/off properly	Yes		Yes		Yes	No	Yes	No	Yes	
	est Equ	ipment	Orifice (Calibrat	ion		1		1	_
STP Full Operating Pressure (psi)							-			_
Line pressure regulated to 10 psi (optional)	Yes	NO	⊔ Yes	No	U Yes	No	Yes	No	Yes	
Volume (ml) measured over 60 seconds	Me	chanica		Test						_
Test Location (Example: Dispenser 7/8)	INC	chanica	ALLU	TCat						-
ALLD resets ("trips") when line pressure is zero	Yes	D No	Yes	□ No	Yes	D No	Yes		Yes	
ALLD Opening Time (seconds)		-		-		_				_
Metering Pressure (psi)										
Check Valve Holding Pressure (psi)										
Resiliency / Bleedback (ml)										
Line remains at Metering Pressure for 60		- Ma		= Ma		- Ma	- Ve-		- Ve-	_
seconds (minimum test time) with leak simulated	L res	No	L res	No		No	Yes		Yes	0
Volume (ml) measured over 60 second test period										
Leak Rate (gph) equivalent to volume measured										_
Set as a second second		ectronic				-				
Set-up parameters correct									Yes	
Simulated leak causes alarm									Ves	
Simulated leak causes STP shutdown (optional)	Yes		Results		U Yes	No No	Yes	□ No	Yes	
Pass / Fail		10001	loouno							
	I						ļ		I	—

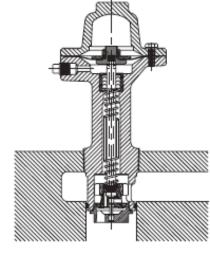
- The order of questions was switched.
- This should model your typical test in the order that you record the #s.
- What is your metering pressure?
 - It is slow flow psi
 - Its not always 10 psi

 This form may be ut All ALLDs (both me 	chanica	I and electron	c) mus	st be test	ed at inst	allation a	nd once	every 12	months.			Test Cond
 All testing must follo 		ttached "MDE	Q Pro	cedure fo	r (estina	Automat	tic Line L			lucting	Testing	a
Facility Name			M	EQ Facilit	y ID #	Tester's	s Name	. 0100	oonu	avany	. ooung	
Physical Address			_			Compa	ny					
City		County			State	MDEQ	Certificatio	n #			Expira	tion Date
UST Owner			MS	Tester's	s Signature				Date			
Test Equipment Used		S	yster	n Inforn		Testin	g Requi	rements	8			
res equipment open					Reason for Test		nnual	New In	stallation	Oth	er	
				Line #/	Product	Line # /	Product	Line #/	Product	Line #/	Product	Line #/ P
Line Num												
Type of Pipe (Stee)		/				,		/	,
Pipe Diamete							:		/ 			1
Type of ALLD: Ele ALLD N				Mech	Elec	Mech	1 🗖 Elec	Mech	1 🖬 Elec	Mech	Elec	Mech
	D Mode											
ALLD Serial Number												
	D is nev			Yes	No No	Yes	No	Yes	No No	Yes	No No	Yes
STP cycles				Yes			□ No			Yes		Yes
Test Equipment Orifice Calibration												
STP Full Opera	ating Pre	essure (psi)										
Line pressure regul				Yes	No	Yes	No	Yes	No	Yes	No	Yes
Volume (ml) meas	ured ov	ver 60 seconds	;	Ma	chanica		Teet					
Test Location (Ex	ample: I	Dispenser 7/8		We	chamca	ALLU	rest					
ALLD resets ("trips")				Yes	No No	Yes	No	Yes	No No	Yes	No No	Yes
ALLD Openin												
Metering												
Check Valve Ho	Iding P	ressure (psi)										
Resiliency /	Bleedb	ack (ml)										
Line remains at Me seconds (minimum tes				□ Yes	No No	C Yes	No No	□ Yes	No No	□ Yes	No No	Yes
Volume (ml) measured												
Leak Rate (gph) equiv												
					ectronic							
Set-up para	ameters	correct				1		1		1		Yes
Simulated le												Ves
Simulated leak causes	s STP sł	hutdown (optio	nal)	Yes		Presults	No	Yes	No	Yes	No No	Yes
Pas	s / Fa	il			Test	Counts						
Comments:												

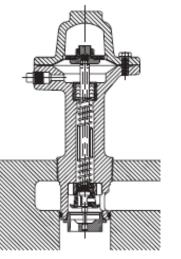
Metering pressure (Depends mainly on MLLD manufacturer)



CLOSED POSITION 1



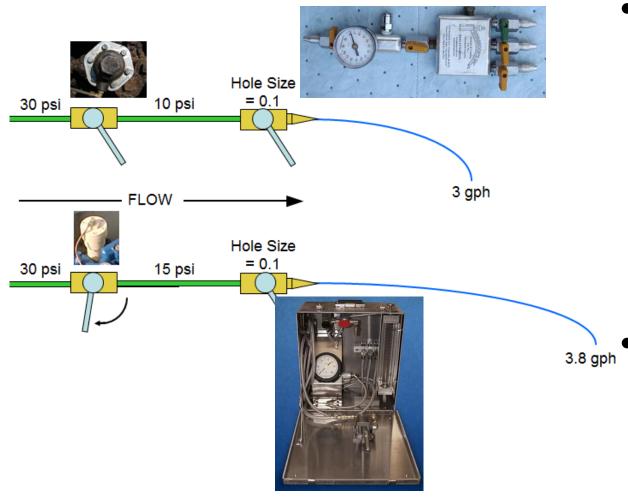
METERING POSITION 2



OPEN POSITION 3

Mechanical	Line Leak	"Closed	Metering
Detec	tor	Position"	Pressure
Manufacturer	Model	(PSI)	(PSI)
Red Jacket	FX1V or	3 – 5	8-16
	FX1DV		
Red Jacket	XLP	1	20-22
FE Petro		1	12-17
Vaporless	LD2000 (No	4	12-15
	Vent)		
Vaporless	LD2000	3	22-24
Vaporless	LD2200	2.5	22-24
Vaporless	LD3000	8	21

Metering pressure (Depends mainly on MLLD manufacturer)



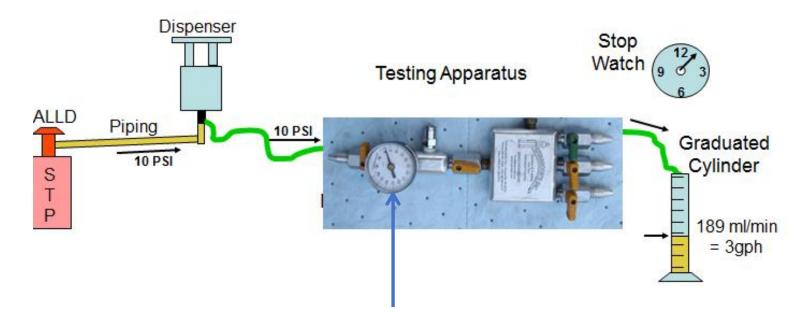
- With hole set & leak simulated:
 - Flow is restricted to Metering pressure by the mechanical LLD (slow flow)
 - Metering pressure should register on your test equipment

• Metering pressure determines leak rate.

(Higher pressure higher leak rate.)

Metering pressure

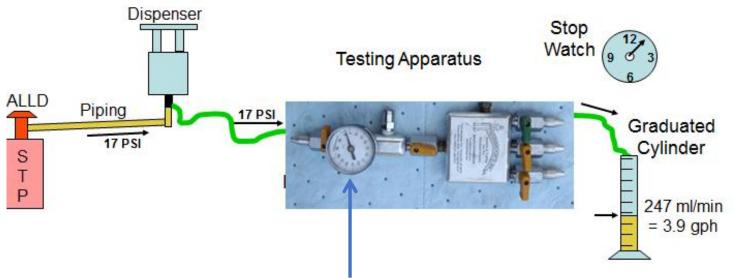
Test equipment – common issue



- Will metering pressure always be at 10 psi?
- NO. Depends on:
 - Type of Mechanical LLD
 - The size hole in mechanical LLD
 - Trapped air & other factors

Metering pressure

Test equipment – common issue



- Metering pressure maybe 17 psi.
- Producing ~ 247 mL/min = 3.9 gph leak rate
 - This is equivalent to 10 psi @ 3 gph hole size
- Leak rate is governed by metering pressure
- You have to measure your leak.....
 - If your leak isn't near 247 mL / min you did not run a good test. Air in line

- Metering pressure should be slow flow psi, with leak simulated, through the hole you set and calibrated.
- You must now again measure the volume of the leak you simulated.
- This time is to confirm your test is good & hole set properly (again)
- Your:
 - Volume measured
 - Leak Rate equivalent
 - Should match what is on charts for metering psi.

> All ALLDs (both	e utilized to document fu mechanical and electror	nic) mus	t be test	ed at inst	allation a	nd once	every 12 r	months.		Date	Test Con	d
 All testing must f 	follow the attached "MDI UST Facility	EQ Proc	edure fo	or Testing	Automat	ic Line L			ucting	Tostin	1	
Facility Name	USI Facility	MD	EQ Facilit	y ID #	Tester's	Name	reison	rcona	ucung	resun	1	
Physical Address					Compar	ıy						_
City	County			State	MDEQ	Certificatio	n#			Expira	tion Date	_
UST Owner				MS	Tester's	Signature				Date		_
												_
System Information & Testing Requirements Test Equipment Used Reason												
				for Test		nual	New Ins	tallation	Othe	er		_
			Line #/	Product	Line # /	Product	Line #/	Product	Line #/	Product	Line #/	P
	lumber / Product	-1										_
	iteel, FRP, Thermoplast	c)		/		/		1				7
	Electronic or Mechanica	al	D Meel	/ h 🗖 Elec	Mech	Elec	/ Mech	Elec	/ Mech	Elec	Mech	<u>/</u>
	D Manufacturer								- chead			-
	LLD Model											-
ALLE	ALLD Serial Number											_
A	LLD is new		Yes	No No	Yes	No No	Yes	No No	Yes	No No	Yes	
STP cyc	cles on/off properly				-		Yes	No 🛛	Yes	No	Yes	_
070 5 11 0		Т	est Equ	iipment	Orifice	Calibrat	tion		1		1	
	perating Pressure (psi)			No No	Yes	D Me	Yes		Yes		Yes	_
	gulated to 10 psi (option easured over 60 second		L Tes		L Tes	L NO		INO	L Tes	IN0	L Tes	-
Volume (m)			Me	echanica	ALLD	Test			1		1	
Test Location	(Example: Dispenser 7/8	3)										
ALLD resets ("trips	s") when line pressure is	zero	Yes	No No	Yes	No No	Yes	No 🛛	Yes	No 🛛	Yes	
ALLD Ope	ening Time (seconds)											
Meteri	ng Pressure (psi)											
Check Valve	Holding Pressure (psi)											_
	cy / Bleedback (ml)											_
	t Metering Pressure for (test time) with leak sime		Ves	No No	Yes	No	Yes	No 🛛	Yes	No No	Yes	
Volume (ml) measu	red over 60 second test p	eriod										
Leak Rate (gph) eo	quivalent to volume mea	sured										
				ectronic								
	parameters correct						Yes					
	d leak causes alarm uses STP shutdown (optic	(lear					Ves				Ves	-
ormulated reak cat	ases one shutdown (optic	nai)	L Yes	□ No Test	Results		Yes		Yes		Yes	
P	ass / Fail											Ī
Comments:					•				•		•	-

Leak Rate Simulated

Remember: 3 gph @ 10 psi is only the HOLE size All of these are equivalent to it.

Line			gph @ 10 psi: Line		
Pressure	15 seconds	60 seconds	Pressure	15 seconds	60 seconds
5 psi	33 ml	134 ml	30 psi	82 ml	328 ml
6 psi	37 ml	147 ml	31 psi	83 ml	333 ml
7 psi	40 ml	158 ml	32 psi	85 ml	338 ml
8 psi	42 ml	169 ml	33 psi	86 ml	344 ml
9 psi	45 ml	179 ml	34 psi	87 ml	349 ml
10 psi	47 ml	189 ml	35 psi	89 ml	354 ml
11 psi	50 ml	198 ml	36 psi	90 ml	359 ml
12 psi	52 ml	207 ml	37 psi	91 ml	364 ml
13 psi	54 ml	216 ml	38 psi	92 ml	369 ml
14 psi	56 ml	224 ml	39 psi	94 ml	374 ml
15 psi	58 ml	232 ml	40 psi	95 ml	378 ml
16 psi	60 ml	239 ml	41 psi	96 ml	383 ml
17 psi	62 ml	247 ml	42 psi	97 ml	388 ml
18 psi	64 ml	254 ml	43 psi	98 ml	392 ml
19 psi	65 ml	261 ml	44 psi	99 ml	397 ml
20 psi	67 ml	268 ml	45 psi	100 ml	401 ml
21 psi	69 ml	274 ml	46 psi	102 ml	406 ml
22 psi	70 ml	281 ml	47 psi	103 ml	410 ml
23 psi	72 ml	287 ml	48 psi	104 ml	415 ml
24 psi	73 ml	293 ml	49 psi	105 ml	419 ml
25 psi	75 ml	299 ml	50 psi	106 ml	423 ml
26 psi	76 ml	305 ml	51 psi	107 ml	427 ml
27 psi	78 ml	311 ml	52 psi	108 ml	431 ml
28 psi	79 ml	317 ml	53 psi	109 ml	436 ml
29 psi	81 ml	322 ml	54 psi	110 ml	440 ml

Table 2 – Cor	Table 2 – Conversion of leak rate from milliliters per minute (ml/min) to gallons per hour (gph)											
Leak Rate	Leak Rate		Leak Rate	Leak Rate		Leak Rate	Leak Rate					
(m1/min)	(gph)		(ml/min)	(gph)		(ml/min)	(gph)					
134	2.1		281	4.5		374	5.9					
147	2.3		287	4.6		378	6.0					
158	2.5		293	4.7		383	6.1					
169	2.7		299	4.7		388	6.2					
179	2.8		305	4.8		392	6.2					
189	3.0		311	4.9		397	6.3					
198	3.1		317	5.0		401	6.4					
207	3.3		322	5.1		406	6.4					
216	3.4		328	5.2		410	6.5					
224	3.5		333	5.3		415	6.6					
232	3.7		338	5.4		419	6.6					
239	3.8		344	5.5		423	6.7					
247	3.9		349	5.5		427	6.8					
254	4.0		354	5.6		431	6.8					
261	4.1		359	5.7		436	6.9					
268	4.2		364	5.8		440	7.0					
274	4.3		369	5.9		445	7.1					
	Note:	1 g;	allon per hour = (63.06 milliliters p	er r	ninute						

Metering pressure depends on model MLLD. May or may not be 10 psi

Bleedback volume

(Normal Pipe Configurations)

- Bleedback volume is the leak. The volume of loss needed to trip LLD (0 psi)
- It is the volume of loss from "Holding pressure" down to 0 psi
- High bleed back volume, means it will take longer time for LLD to trip.
- High bleed back volumes can indicate:
 - Trapped air in the lines. (Long Opening times)
 - Stretchy flexible pipe near failure
- How much is to much? Difficult to put a # on it.
- In general: If your bleed back volume increases substantially from previous LLD test it can indicate line failure early on.
- Measure and record bleed back accurately.

Line Pressur	1 15 seconds	60 seconds	Line Pressure	15 seconds	60 seconds	
5 psi	33 ml	134 ml	30 psi	82 ml	328 ml	
6 psi	37 ml	147 ml	31 psi	83 ml	333 ml	
7 psi	40 ml	158 ml	32 psi	85 ml	338 ml	
8 psi	42 ml	169 ml	33 psi	86 ml	344 ml	
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13 psi	54 ml	216 ml	38 psi	92 ml	369 ml	
14 psi	56 ml	224 ml	39 psi	94 ml	374 ml	
15 psi	58 ml	232 ml	40 psi	95 ml	378 ml	
16 psi	60 ml	239 ml	41 psi	96 ml	383 ml	
17 psi	62 ml	247 ml	42 psi	97 ml	388 ml	

Table 1 - Volume that must be discharged within indicated time frame to be equivalent to a

	ALLD resets ("trips") when line pressure is zero	Yes No	Ves No	Ves No	Ves No	🗖 Yes 🗖 No
	ALLD Opening Time (seconds)					
	Metering Pressure (psi)					
	Check Valve Holding Pressure (psi)					
	Resiliency / Bleedback (ml)					
,				1		· · · · ·

Electronic PLLDs

- You still have to:
 - calibrate your orifice.
 - Simulate your leak.
 - Ensure that PLLD catches it. (Alarm on ATG)
- Correct parameters are input?
 - Question is on ATG & LLD test form
 - If general, if PLLD passes 3 gph LLD test you simulate pass it on LLD test form.
 - Programed parameters are much more critical for 0.2 & 0.1 gph leak tests

	-	o document fund al and electronic			-						Date	Test Con	duct
All testing m		attached "MDEQ	Proc	edure fo	or Testing	Automat	ic Line L						_
Facility Name	05	T Facility	MD	EQ Facilit	v ID #	Tester's	s Name	Persor	1 Cond	ucting T	esting		_
					·								
Physical Address						Compa	ny						
City		County			State MS	MDEQ	Certificatio	n #			Expirat	tion Date	
UST Owner					-	Tester's	s Signature				Date		
		Su	etan	a Inforr	nation 8	Teetin	a Dequi	remente					_
Test Equipment U	sed	39	SICH	i inion	Reason					_			
					for Test		nnual	New In:	stallation	Othe	r		
				Line #/	Product	Line # /	Product	Line #/	Product	Line #/F	roduct	Line #/	Pro
	ne Number / P												
		, Thermoplastic)							,	,			_
	Diameter / Leng				/		/			/		/	
		or Mechanical		Mech Mech	h 🗖 Elec	Mech Mech	1 🗖 Elec	Mech	Elec	Mech	Elec	Mech	
	ALLD Manufac												
L	ALLD Mode												
	LLD Serial Nu				E No	- Vee	B Ma					- Vee	_
	ALLD is ner				No No					Yes		Yes	
511	^o cycles on/off	property	T	_	Ipment		□ No Calibrat	I Yes		Yes		Yes	-
STP Fu	II Operating Pr	ressure (psi)	_	our Equ	in printerice	0	ounoru						_
Line pressu	re regulated to	10 psi (optional)	Yes	No	Yes	No No	Yes	No No	Yes	No	Yes	
Volume (m	l) measured o	ver 60 seconds											
				Me	echanica	ALLD	Test						
Test Locat	ion (Example:	Dispenser 7/8)											
ALLD resets ('trips") when lir	ne pressure is ze	ero	Yes	No	Yes	No	Yes	No	Yes	No No	Yes	
ALLD	Opening Time	(seconds)											
M	etering Pressu	re (psi)											
Check V	alve Holding P	Pressure (psi)											
	liency / Bleedt												
		Pressure for 60 with leak simula	ted	🗆 Yes	No 🛛	Yes	No	Yes	No 🛛	Yes	No 🛛	Yes	
		0 second test per											
Leak Rate (gpl	n) equivalent to	o volume measu	red										
				EI	ectronic	ALLD	Test						
Set	up parameters	s correct		Yes	No	Yes	No	Yes	No	Yes	No No	Yes	
Simu	lated leak cau	ses alarm		Yes	No	Yes	No	Yes	No	Yes	No	Yes	
Simulated lea	k causes STP s	shutdown (optiona	al)	Yes	No No			Yes	No No	Yes	No No	Yes	
	Pass / Fa	ail			Test	Results							
	Fa55/Fa	an											

LLD test should be performed under "Normal" operating conditions.



- STPs should cycle On/off as they normally do.
- At no time should you have to:
 - Shut off a ball valve
 - Adjust settings on smart controller
 - Have prior authorization from store clerk. (solenoid valves)
- Multiple STPs smart controllers
 - Once 1 STP senses leak and goes into slow flow the controller should prevent all other STPs from cycling "ON"
 - This should be confirmed.
 - Raise handles at multiple dispensers.
 - Are you still in slow flow?

Diesel Satellite lines / solenoid valves



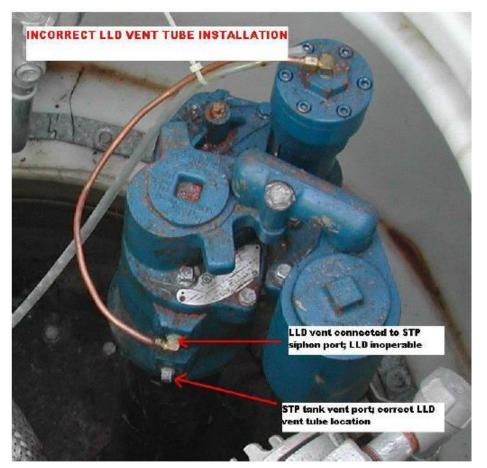
Valve

- Still maybe few of these around.
- LLD test should always be performed at furthest diesel sat SV.
- Satellite line is masked by valve.
- Leak cannot be seen by LLD.

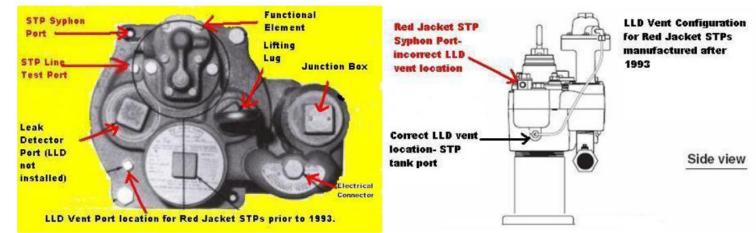
LLDs made to vent must vent unrestricted



Where the vent line drains to also matters.



- Drain line connected to Syphon port.
- Very bad idea.
- Will prevent Mechanical LLD from staying in slow flow.
- No slow flow No indication of 3 gph leak.
- This should show up on your LLD test if done properly.



LTT Equipment

Volumetric



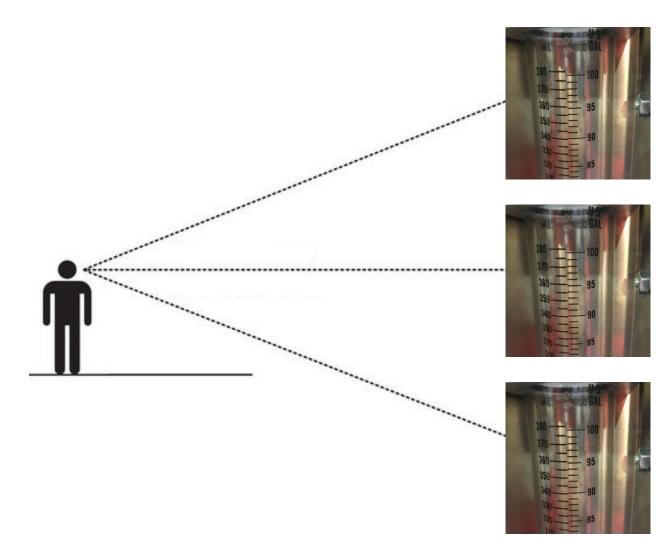
Constant Pressure



- Care should be taken when:
 - Reading Burette
- A leak is a leak.
- Even if it does NOT meet the threshold to fail.
 - MDEQ wants to see the data.
 - We want to know if a leak is present even if it does not meet threshold.
 - What does your data show?
- EVERY line fails until you make it prove itself, beyond a doubt as passing.

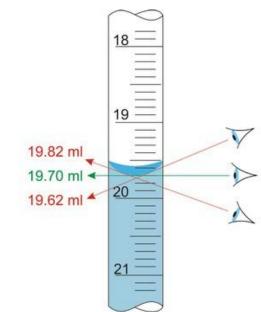
Reading the Burette

It is easy to say, OH that looks close enough. Applies to both methods.



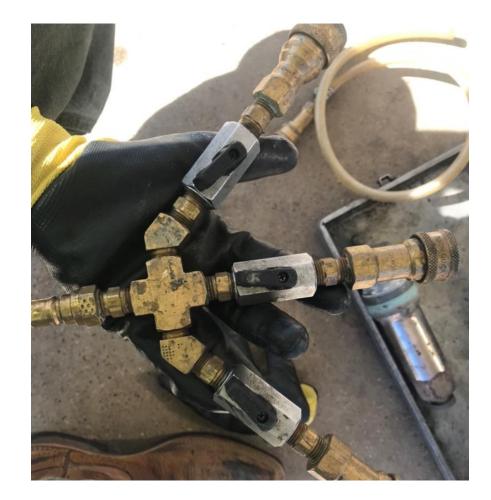
- You could easily get several readings for the same level depending on how you look.
- Your line of Sight MUST be consistent for each reading.
- Straight on is more accurate
- Top or bottom of Meniscus?

Bottom



Line tightness testing (Issues we see)

- All tests must be done at 1.5 times the operating pressure of the STP. The test pressure should be clearly stated on the form that you use.
- Know the limitations / restrictions of your test equipment. Ex:
 - Line Capacity.
 - Pre-test requirements
- Can you test gas lines with diesel lines on the same test? No.



LTT Equipment

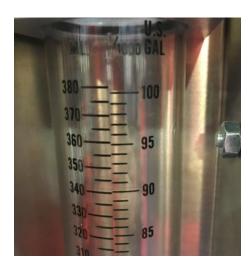
Use of Manifold – Volumetric - Petrotite

Number of Lines	Test Times	Number of Consecutive <u>Readings</u>	Interval
<u>1</u>	30 Minutes	<u>Six (6)</u>	5 Minutes
2	30 Minutes	Three (3)	10 Minutes
3	30 Minutes	<u>Two (2)</u>	15 Minutes

- Originally evaluated for consecutive 15 min intervals
- Will you see larger loss in 5 min or 15 min? (Be careful reading burette)



- Net volume change not exceeding +/- 0.01 gph for hour test
- Net volume change not exceeding +/- 0.005 gph for 30 minute test
- Net volume change being what?
 - The difference between initial and final reading?
- Does it matter?
 - Quicker readings may let you test quicker. Aides in keeping pressure constant.
 - All well below typical 0.05 gph threshold



Certified Contractor Regulations

- Everyone should be licensed. (Options: Installer, Technician, Closure, CP tester)
- New Licenses:
 - Installer and/or Closure Proof of 2 years experience
 - Technician Proof of 1 year experience.
 - CP tester proof of completion of approved course. (NACE, STI, PETCON, ALPEC, GTEC)
 - All applicable manufacturer and/or test equipment certifications.
- Current Installer License Renewals (After 8/23/20):
 - required to have CP tester license.
 - required to provide copies of all manufacturer and/ or test equipment certifications.
 - Good news:
 - You can choose to drop your closure license.
 - We do accept Technician Courses as continuing education for installer license renewals.
 - Manufacturer certification **<u>NOT</u>** required for LLD tester / LLD equipment.

Manufacturer Certifications Required

List maybe found here:

- https://www.mdeq.ms.gov/wpcontent/uploads/2018/12/UstManufacturerLi st.pdf
- In General:
 - All Precision 0.1 gph test equipment.
 - Installation of Primary UST components. (Tank, pipe) (Excludes: Flex connectors / ball valves, etc.)
 - UST products made to contain a release from UST equipment. (2 part sumps, DW sumps, new or retrofit sump fittings)
- If you see something not listed, ask us

36	condary Containmen	t Sump Penetration fitting	S			
Manufacturer	Penetration Type	Certifications				
Diversified Products	Traditional boots	New & Split Repair	3 years			
Manufacturing, Inc.						
Bravo Systems	FRP Entry Fittings		3 years			
	FRP Retrofit Fittings		3 years			
lcontainment	Split Repair Fittings	Repair Fittings 2 ye				
	ATG Manufact	urer Certifications				
Manufacturer	Equipment	Certifications	Period			
All ATG manufactu	rers that provide certi	fication for "Start-Up" pro	graming of ATGs.			
	Testing Certifi	ications required				
Manufacturer	Equipment	Certifications	Period			
Hasstech	Acurite	Pipeline Tester	2 years			
Estabrook's EZY Chek	EZY 3 Locator Plus	Tank Tightness tester	2 years			
Systems						
	Product Line	Product Line Tester	2 years			
	Tester					
Franklin Fueling	Incon TS-STS	Sump Test System	2 years.			
Systems						
	Mesa 2-D Method	Tank tightness tester	2 years			
Mesa Engineering						
Mesa Engineering	with ACT water					

Certified Contractor Regulations

Reporting requirement

• You are required to notify tank owner in writing whenever testing fails.

(annual, monthly LD, specialty tests)

- You can do this by:
 - Providing them copy of test report.
 - Describe the issue on invoice to them.
 - Notify them by email or mail. (Something do document the exchange.)
 - Use our form:

(Should make it easier on you. Attach it to invoice.) (NO you don't have to go into great detail on the issue.)

**Tank owner should report it to MDEQ.

**If you have an issue with a tank owner, send this form to MDEQ.

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY Notification of UST System Failures to Tank Owner

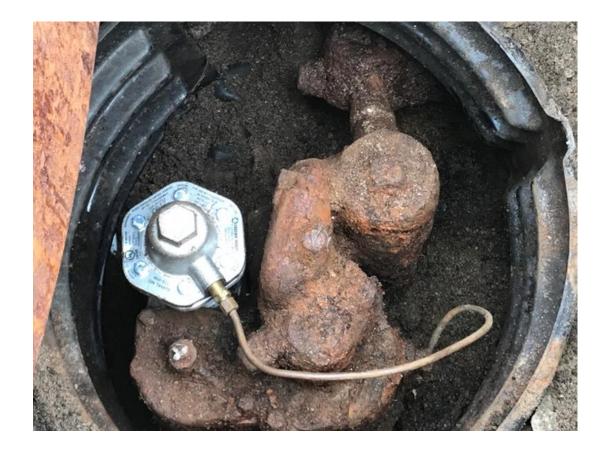
> This form may be utilized to document notification of UST system failures that need immediate attention. If you

provide the tank owner with copies of test documents you have already met the notification requirement.

> All failures or suspected releases shall be reported to MDEQ within 24 hours by the tank owner / operator.

	UST Facility		Person Identifying Failures
Facility Na	ame	MDEQ Facility ID #	Inspector's Name
Physical A	lddress		Date of Notification
Metho	od of Notification: 🔲 Onsite Fac	ility Staff 🔲 Ema	il 🗌 Mail 🗌 Fax 🗌 Other:
	Onsite	Facility Staff Red	eiving Notification
NAME	SIGNATURE (Not Require		eiving this notification I was notified of the need to provide this
		report to	the current "Responsible Party" of this facility <u>IMMEDIATELY</u> .
Failed	Specialty Tests		Specify Issue
	Precision Tank Tightness Test		
	Precision Line Tightness Test		
	Tank Secondary Integrity Test		
	Pipe Secondary Integrity Test		
	Secondary Containment Sump Integri	ty Test	
	Cathodic Protection Test		
	60 day Rectifier Log		
	Temporarily Out of Use Tanks Inspect	ion	
	UST System Compatibility Inspection		
	Soil Sampling Results		
	Other:		
	Annual Tests		Specify Issue
	Spill Bucket Integrity Test		
	Overfill Device Inspection		
	Shear (Impact) Valve Test		
	Line Leak Detector Test		
	Automatic Tank Gauge Inspection		
	Secondary Containment Sump Inspect	tion	
	Interstitial Sensor Test		
M	Ionthly Monitoring for Leak Detecti	on	Specify Issue
	Monitoring Well results		
	ATG 0.2 gph leak test results (tank)		
	Electronic LLD 0.2 gph leak test result	s (pipe)	
	Visual Interstitial Monitoring Results		
	Electronic Interstitial Monitoring Resu	lts	
	Monthly Walk Through Inspection		Specify Issue
	Spill Bucket Inspection		
	Overfill Prevention (Fill Pipe) Inspection	on	
	Other:		
Comme	nts:		

Repairs



- All repairs must be retested and documented on forms.
- Includes (but not limited to)
 - OF devices, LLDs, Sensors, ATG probes, CP modifications, LTTs
- If MDEQ does not see retest, tank owner will be cited.

UST Technical Regulation Changes Due Dates

- 10/5/18 Past Due
 - Alternative Fuel / hazardous Substance Compatibility checklist
 - <u>https://www.mdeq.ms.gov/wp-content/uploads/2018/11/CompatibilityChecklist.pdf</u>
 - Systems storing greater than E10 or B20
 - The push for E-15. Pipe dope prior to 2007 likely NOT compatible. If they went cheap after 2007, still likely NOT compatible.
 - (Check equipment invoices from install.)
 - If they can't prove the pipe dope you may as well stop there and fail it.
- 10/5/19 Past Due
 - Annual Inspection of Temporarily out of use UST systems
 - Annual Sump inspection
 - Required for all piping sumps using Interstitial Monitoring. (Sumps using Sensors was previously deferred.)

UST Technical Regulation Changes Due Dates

- 10/5/21
 - Containment Sump Integrity test (Hydro test)
 - Required for all sumps using Interstitial monitoring
 - Emergency Power Generator Tanks / piping
 - Required to have leak detection.
 - Monthly Walk Through Inspection
 - <u>https://www.mdeq.ms.gov/wp-content/uploads/2019/04/MonthlyWalkthroughAnnual.pdf</u>
 - <u>https://www.mdeq.ms.gov/wp-content/uploads/2019/04/MonthlyWalkthroughMonthly.pdf</u>
 - They can choose to use Monthly <u>OR</u> Annual version.
 - Monthly was setup for contractors to use / billing.
 - If you can talk them into doing the "Recommended Sections" please do so.
 - Annual Hand Held Release Detection Equipment inspection bailers / sticks
 - If they don't use SIR or monthly GW / Vapor monitoring, then they don't need it.

Annual TOSI Inspection

- If you don't know the date it went TOSI leave it blank.
- Pipe securely capped at dispenser.
 - If it's still hooked up to dispenser that is fine.
- If they use GW / Vapor monitoring to meet the site assessment:
 - Only one monthly record needed.
 - Wells must be installed properly.
 - Spacing. (2 @ end single tank, 4 @ corner multiple tanks)
 - Depth 1 ft below tank bottom (dry wells)
 - Water level below MW slots (wet wells)
- Power to STP should be shut off permanently. (Building, Breaker, Wiring)

https://www.youtube.com/watch?v=EcsYAjoRtFA

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ANNUAL INSPECTION OF TEMPORARILY OUT OF USE UST SYSTEMS

- This form may be utilized to document inspection of temporarily out of use UST systems.
 Date of Inspection
- Inspection is required by 10/5/2019 and every year (1) thereafter.
- Tanks must contain less than 1 inch fuel, corrosion protection must be maintained, and a site assessment must be performed within 1 year of becoming Temporarily Out of Use.
- > Only adequate Soil Sampling and Analysis Results may be used for Permanent Closure of UST systems.

UST Facility Person Conducting Test							t						
Facility	Name			MDEQ Fa	cility ID #	Ins	pector's N	ame					
Physica	l Address					Co	mpany						
City		County			State MS	Ins	pector's Si	gnature				Da	te
USTO	UST Owner UST Owner Permanent M					Addres	55		USTOw	ner F	hone Nur	nber o	r Email address
			TOS	IUST S	ystem	Ins	pectio	n Res	ults				
Reaso	on for Test	Routir	ne Inspection	n 🗌 Re-	-inspect	ion (a	after faile	d inspe	ection)] 0	ther:		
	Comp	onent ID	(tank, pipe)										
	Date compone	ent was tal	ken out of se	ervice									
	Tank co		ccessible? s than 1 inch	n fuel?		Yes Yes	_		es 📃 No es 🗌 No		Yes	No No	Yes N Yes N
TANK	If no, how much fuel? (Inches)												
4			in the tank?	,									
	Vent pipe	es appear (open and fu	nctional		Yes	No No	Ye	es 📃 No		Yes 🗌	No	Yes N
	Piping is se	curely cap	ped at the d	ispenser?	, 🗖	Yes	No No	🔲 Ye	es 📃 No		Yes	No	🗌 Yes 🗌 N
PIPING			e termination ed from corr			Yes No Yes No Yes				No	Yes 🗆 N		
dId	(Sump, Boots	s, Cathodio	on Protection Protection, Other: (spec	Not burie	d,								
	Pass	or Fail (Visual Inspe	ction)									
<u>ہ ج</u>	List the date t	hat the las	t cathodic pr	rotection s	urvey w	as p	erformed	l on (if a	applicable):	DATE		
Cathodic Protection	Cathodic Prot	tection Sur	vey perform	ed by (if a	pplicabl	e):	COMPAN	IY / INDI	VIDUAL				
Pro	60 Day Recti	fier Log is	being mainta	ained?(if a	pplicabl	le)	🗌 Yes	🗌 No	BY WHO	M?			
L	Select One		llowable Me						cumentat			be	
EN.	_ <u>_</u>		Sampling and Sampling ar						n sent to M n sent to M				Yes 🔲 No Yes 🔲 No
SITE ASSESSMENT		Ground \ (Dela	Vater Month ays the requi	ily Monitor	ring		e all Susp	pected/	Confirmed d to MDE	d rel			Yes 🔲 No Yes 🔲 No
			(Minir	num of 1 i	month re	equin	ed.) Atta	ch all n	nonthly rea	cord	s to this	form.	
Comn	nents:												

Interstitial Monitoring

Common Question

- I can't keep the water out.
 - What do it do?
- Fail annual sump inspection.
 - Required for all piping using Interstitial monitoring.
 - More than 1" water observed fails inspection
 - Very frequent water intrusion issues (if known by you) should also fail the inspection.
- Why?
 - DEQ inspectors look for routine water intrusion issues. (monthly records)
- Fail: Triggers need for sump integrity test.
- Never ending cycle.
 - Until tank owner fixes water intrusion issue

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Date of Inspection

ANNUAL CONTAINMENT SUMP INSPECTION

- This form may be utilized to document the inspection of containment sumps.
- Inspection of containment sumps is required once every 12 months.
- In the absence of a recognized industry procedure or manufacturer's recommended practice, the inspection methodology outlined below (see "MDEQ Containment Sump Inspection Procedure") may be utilized.

methodology oddine	a pelow (see		Jintain	ment ou	nub i	rispection		cedure j	may	be dunzer	u.				
U	ST Facility	/					F	Person	Co	nducti	ng	Inspec	tio	n	
Facility Name		N	IDEQ	Facility ID)#	Inspector	's Na	me							
						_									
Physical Address						Company									
City	County			Stat		MDEQ C	ertific	ation #				Expiratio	on Da	te	
				MS	S										
UST Owner						Inspector	's Sig	nature							
	t Si	ump In:	spe	ection											
Sump Material of Construction	iberglass Re	inforced	Plast	tic 🔲	Th	nermopla	astic	: 🗆 🤅	Stee	I 🗆 0	the	r:			
	MD	EQ Cor	ntain	ment 9	Sum	np Inspe	ecti	on Pro	ced	ure					
1. Clean-out and prop															
Visually examine the indications that the				nsure th	ere	are no c	rack	s, holes	, det	eriorated	sea	als, defoi	rmat	ion or ot	her
3. If the sump appear				water w	/as i	n the sur	np. t	the inspe	ectio	n result i	is "P	ASS"			
4. If the sump appear	s to be liquid	l tight bu	t wat	er was j	pres	ent withi	n the						AIL	" and	
integrity testing is i															
If there is visual ev required and integr													of th	ne sump	IS
	EQ certificat												3		
		Ins	pec	tion R	esı	ults for	the	Year							
Sump ID									_			T			
(product stored for STP or dispenser number)															
Sump lid/gasket in good	Y/N -	Y/N	-			Y/N		Y/N		V/N		V/M		V/N	
condition (yes/no)	Y/N -	Y/N	Ľ	Y/N		Y/N	<u> </u>	Y/N	<u> </u>	Y/N	_	Y/N	-	Y/N	-
Sump is dry (yes/no)	Y/N -	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	-	Y/N	-	Y/N	•
If NO, how much water is present (Inches)															
All penetration fittings in good condition (yes/no)	Y/N 🔹	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•
Sump walls/bottom in good condition (yes/no)	Y/N 🔹	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•
Are there any leaks from pipe components (yes/no)	Y/N -	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•	Y/N	•
Inspection Result (Pass/Fail)	P/F -	P/F	•	P/F	•	P/F	•	P/F	•	P/F	•	P/F	•	P/F	•
Comments:															

Containment Sump Integrity test

- Required when?
 - By 10/5/2021 and every 3 years thereafter
 - At installation of sump or repair of sump
 - When annual inspection indicates Fail.
 - When DEQ requests it:
 - Fuel observed in sump release investigation
 - Significant signs of water intrusion
- Hydrostatic test
 - Fluid level should be 4" above top of fitting or sump seam. (requires documentation)
 - Fluid level should be 4" higher than groundwater. (no documentation required)

	CONT	AINMENT	SUMP	INTEGR	ITY TES	TING		
> This form may be	utilized to docume	nt integrity test	ing of conta	ainment sump	S.			e of Test
Testing of all cor after any annual insp							nd	
> In the absence of	f an approved 3rd p	arty test proced	dure or mar	nufacturer's re	commended	practice, the te	est	
method outlined t	elow in the "MDEC		est Proced	ure" section m			er Taat	
Facility Name	UST Facility		Facility ID #	Tester's Name		Conductin	ig rest	
r domy Harre		more a	dointy to #	resters reame				
Physical Address		I		Company				
0.5.	Country		Chata	MDEO Codific	-1' #		L Euristi	Data
City	County		State MS	MDEQ Certific	ation #		Expiration	on Date
UST Owner				Tester's Signa	ture		Date	
		Conta	ainment	Sump Tes	ting			
Reason for Test	New Installa	tion 🔲 Rou	tine 3 yr Te	est 🔲 Rep	air / modifica	ition 🔲 Re	elease Inve	stigation
	Hydrostatic (Complete "Te	st Data" tal	ble below)				-
Type of Test		ach test equip			ta sheet/test	protocol to th	is form)	
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Other (Speci						io ioiiii)	
			hudrootati	a Teat Dree	oduro			
1. Remove and	properly dispose (ic Test Proc		sh) in the con	tainment su	mn
	enetration fittings.							
	n. If possible, the					•		ago or
	ping test boots or					-		np sensors.
4. Document the	e height of the higi	hest sump per	netration fit	ting or sump	seam as me	asured from th	he bottom o	f the sump.
5. Fill sump with	water to a level a	t least four inc	hes above	the highest	penetration fi	itting or seam	(e.g. two pi	ece
	ly that the water le			-		the groundwa	ater level. Le	et water
	ast 15 minutes to							
	e initial water level							
	mp undisturbed fo				-		ding fluid le	evel.
	evel is the same or less than 1/8th of a						stigation: fl	uid level
	uld be taken very o		critical for te	ests periornie	d as part of	a release inve	sugation, it	uld level
-	properly dispose of	-	the conclus	sion of testing				
	condary piping tes			-		ic sump sense	ors.	
			Test	Data				
Sump ID								
(product stored for ST								
dispenser number	0							
Highest penetration f	itting							
or sump seam (inch	es)							
Test Start Time								
Test End Time								
Initial Water Level (inc	ohes)							
Final Water Level (inc	shes)							
Test Result (Pass/F	ail)							

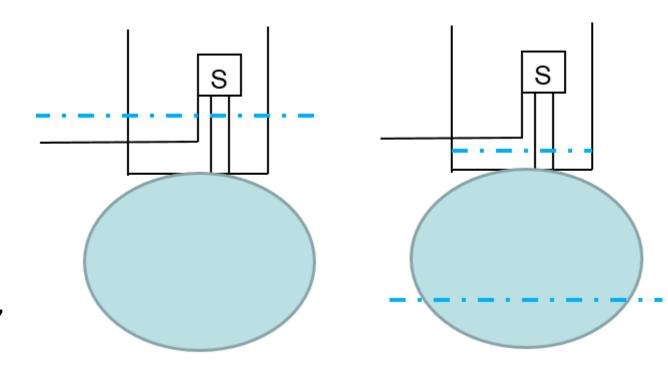
Comments

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Containment Sump Integrity test

4 inches above groundwater? What's the point?

- Goal is to detect slow leaks not easily visible
- If no difference in water level
 - Leak won't be seen.
- Small difference
 - Leak may not be seen. < 4"
- The greater the difference
 - The quicker the leak will be seen. > 4"
 - Can help catch slower leaks.



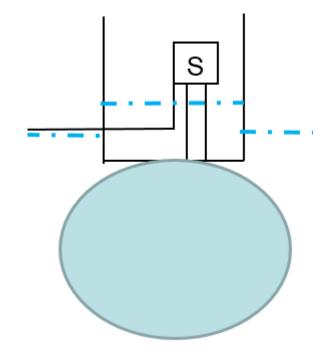
Containment Sump Integrity test

How do I do determine GW level?

- How do you determine it?
 - Monitoring wells. (preferable)
 - Water level in sump when you first open it up. (assumes water levels has equalized out)
- If water level is equal to GW level when you open sump up, you can bet that sump is leaking. Trick is how do you detect it?
 - Use higher difference.

(Using more than 4" is okay. 4" is the minimum)

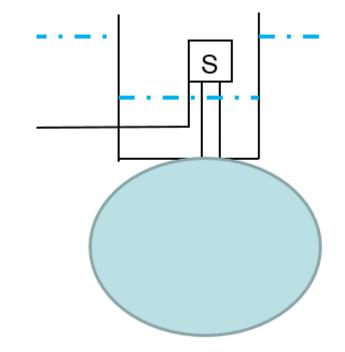
- Hydro test requirements:
 - Minimum 4" above fitting or seam.
 - Minimum 4" difference to GW level.



Containment Sump Integrity test

Underfill hydro test?

- In some cases you can't test 4" above GW level.
- It is acceptable to use underfill test.
- Underfill hydro test requirements:
 - Need to document it in comments on form:
 - Why you did it.
 - Why you couldn't do traditional hydro test.
 - Have to have some water in sump.
 - To determine if fluid level does change.
 - Looking for 1/8 inch INCREASE in water level. (Not traditional 1/8 inch decrease)



• Remember "Greater the difference" = "Better Test"

Containment Sump Integrity test

Let's be clear.

- Most sites in MS can us traditional hydro test.
- Underfill method should only be used in extreme conditions.
 - Water "confirmed" as being right below concrete.

Ex. Of not appropriate use.

- 3 STP sumps & 3 dispenser sumps bone dry.
- 3 dispenser sump completely full of water when you open them.
- Only MW on site is at tank bed and it is bone dry.
- Underfill method should NOT be used on the 3 sumps full of water.
 - Likely NOT appropriate since well at tank is dry.



Containment Sump Hydrostatic Integrity test

May easily take over 1 hr to complete... why?

- Ideally you will seal up pipe interstice and it will be tight. Test fluid level in sump won't fluctuate by much.
- More commonly pipe interstice won't seal up tight. What happens then?
 - Water travels through pipe interstices to other sumps.
 - The water levels will try to equalize out between all sumps connected by pipe interstice.
 - May take many hours for the test water to equalize between sumps.
 - Loss or Gain of 1/8 inch per hr is your Pass / fail criteria in MS.
 - Just because a sump passes 1/8 inch per hr doesn't mean you won't have water intrusion issues monthly.

Containment Sump Integrity test

Update on common questions:

- PMA low level testing. Not approved.
- MDEQ allowance for water disposal on site. – Not approved.
- Dri Sump Not approved for sites with water above sump bottoms.



Pipe Interstice Test Form

- Required for:
 - New install or repaired pipe IT
 - Piping NOT sloped to a containment sump by 10/5/2021 and every 3 years thereafter.
- Ex. OPW loop system
- Regs require:
 - Line Tightness Test. (3 year)
 - Pipe secondary integrity test. (3 year)

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Piping Secondary Containment Integrity Testing

- This form may be utilized to document integrity testing of Secondary Containment Piping.
- Testing of secondary containment pipes installed after 10/1/08 is required at installation, after any repair or modification to an existing secondary pipe (installed after 10/1/08) that may affect its integrity, and anytime a sump inspection indicates a suspected release such as water intrusion from the secondary pipe into the containment sump or when product is seen passing through the secondary containment piping.
- Testing procedure including test pressures should follow the pipe manufacturer's specifications or an approved 3rd party test procedure taking into account MDEQ requirements for testing listed under "MDEQ Pipe Secondary Containment Test Requirements" below.

The occorrigant con	real internet is	senequiren	icites a							
UST Facility			Person Conducting Test							
Facility Name MDEQ Facility ID #			Tester's Name							
Physical Address		·		Company						
City	County		State	MDEQ Cert	ificati	ion #		Expirati	on Date	
MS										
UST Owner				Tester's Sig	natur	re				
Pipe Secondary C			ndary Co	ontainmen	t Tes	sting				
Reason for Test	New Ir	nstallation	E)	kisting Insta	allati	on 📃 Re	lease Ir	nvestiga	tion	
Piping Construction	🔲 Rigid	🗌 Semi-Rig	gid 🔲	Flexible		Other:				
Pipe Manufacturer				Pipe Mo	del					
Gauge Range			Gaug	e Units		psig 🔲 in	HG 🗌	Other:		
 MDEQ Pipe Secondary Containment Test Requirements 1. Test duration should be a minimum of 1 hour. 2. Gauge range should not exceed 2.5 times the test pressure and gauge readings should be in 0.5 increments. 3. Pressure should be applied at one end of the piping being tested. A secondary gauge maybe necessary to install at this end of the pipe run to prevent damage from over pressurizing the pipe secondary. If gauge is installed at this end of the pipe run, it should NOT be used to obtain the integrity test data below. 4. The gauge should be installed and monitored at the opposite end to obtain integrity test data below. 5. Piping should be restored to its normal operating condition. (Open to secondary containment sumps.) 							to			
				Test Data						
Product Stored										
Pressure applied at	:									
Pressure gauged at	:									
Test Date (s)										
Begin Test Time										
End Test Time										
Initial Reading										
Final Reading										
Test Result (Pass / Fa	ail)									
Comments:		P		-	-		-	_		

Pipe Not Sloped to Containment Sump

Examples (NOT limited to loop system only)



Pipe Interstice Test Form

- Continuity is tested on form:
 - Pressure applied at: (STP sump)
 - Pressure gauged at: (Disp 9/10)
- Pressure should not be applied and gauged at the same location.
- If you don't see pressure increase at gauging end, you
 - Have a large hole
 - Interstice is blocked somewhere.

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Piping Secondary Containment Integrity Testing

- This form may be utilized to document integrity testing of Secondary Containment Piping.
- Testing of secondary containment pipes installed after 10/1/08 is required at installation, after any repair or modification to an existing secondary pipe (installed after 10/1/08) that may affect its integrity, and anytime a sump inspection indicates a suspected release such as water intrusion from the secondary pipe into the containment sump or when product is seen passing through the secondary containment piping. Testing assertion including test preserves as well follows the provide the secondary containment piping.
- Testing procedure including test pressures should follow the pipe manufacturer's specifications or an approved 3rd party test procedure taking into account MDEQ requirements for testing listed under "MDEQ Pipe Secondary Containment Test Requirements" below.

UST Facility			Person Conducting Test								
Facility Name		MDEQ Facilit	ty ID #	Tester's Nar	ne						
Physical Address				Company							
City	County		State	MDEQ Certi	ficati	on #			Expirati	on Date	
			MS								
UST Owner	Tester's Signature										
		Pipe Secor	ndary Co	ontainment	t Tes	ting					
Reason for Test	New Ir	stallation	E)	kisting Insta	llati	on	🗆 Re	lease I	nvestiga	ation	
Piping Construction	🔲 Rigid	Semi-Rig	gid 🔲	Flexible		Other:					
Pipe Manufacturer				Pipe Mo	del						
Gauge Range			Gaug	e Units		psig	🗌 in	HG 🗌	Other:		
		ipe Seconda		tainment T	est F	Require	ement	5			
 Test duration should 											
2. Gauge range should											
3. Pressure should be a			· · ·	-				-			
install at this end of t			<u> </u>								e is
installed at this end of											
 The gauge should be Piping should be res 							_				
5. Piping should be res	tored to its ii			Test Data	Jeni	lo seco	nuary	contai	nments	umps.)	
Product Stored			ice Diricy	Test butu						1	
Pressure applied at	:										
Pressure gauged at											
Test Date (s)											
Begin Test Time											
End Test Time											
Initial Reading											
Final Reading					-						

Test Result (Pass / Fail)

Comments:

Pipe installation issues

(Why pressurize and gauge at opposite ends?)



- Restrictions due to improper installation.
- Cross over tube fittings may or may not be installed properly. Do NOT assume!
- Why should constant pressure gauges be used?





Is the pipe interstice open?

No Cross over tubes

- Separate sections of piping.
- One end must be open.
- Open to include:
 - Valve stem removed.
 - Boot slid back
 - Boot clamps loosened so it spins easily.
 - Cross over tubes / fittings in place with tube cut.
- STP end must ALWAYS be open.



Pipe Interstice testing

(If we cant see how it was possibly tested Properly were going to question the results)

Factory Installed fitting



Same penetration fitting. Factory plug not removed.



Not Tested Properly.

Same penetration fitting. Factory plug resin covered.



UPP fitting. Appears open right? It's not. Clear plastic covering it.



Not Tested Properly.

Designed to be at end of pipe run. Did they test IT properly?

Looks good.

Pipe Interstice testing

(If we cant see how it was possibly tested at all we may reject the results)



Is the pipe interstice open?

Cross Over Tubes

- Cross over tube joins multiple sections of piping into a run.
- Both ends of a pipe run must be open.
 - Increase quickness of leak detection
 - If there is a restriction in the tube you improve chances of catching the leak.
- STP end must ALWAYS be open.





Why must STP end always be open?

• It is the lowest point.

- MDEQ has found several pipe interstices:
 - Closed at the STP.
 - Covering up pipe secondary issues.
 - Water intrusion through pipe interstice.



Annual Handheld Release Detection Equipment Inspection

- Due by 10/5/2021.
- If you do monthly GW / Vapor monitoring for your clients.
 - Fill one out for YOUR equipment. Provide copy to tank owner with annual test reports.
- If you have clients who do their own GW / Vapor monitoring:
 - You can do this inspection on their equipment.
 - Tank Owner can do it on their own equipment.
- If you perform annual tests at an SIR site.
 - Check their sticks. Pass / fail accordingly.
 - Tank Owner can do it on their own equipment.

	MISSISSIPPI DEPARTMENT ANNUAL HANDHELD RELEASE D								
➤ This	form may be utilized to document adequate operabilit	ty and serviceat	bility of ALL handheld	f release detection equipment.					
	ection of Handheid release detection equipment is req	-	-						
	UST Facility Person Conducting Inspection								
Facility N	ame Facility ID≢								
Facility A	ddrexs								
	MDEQ Hand Heid Release Detec	tion Equipm	ent Inspection Pr	rocedure					
≻ If ar	ually inspect all applicable handheld leak detection ny answer is "NO" for the equipment being inspect ipment must be reinspected once service, repair,	ted; service, re	pair, or replaceme						
	Manual Tank Gauging or Manual Statistical	Inventory R	econciliation	Inspection Results					
Aiigau	ge sticks on site are the appropriate length for all	🗆 Yes 🗆 No 🗆 NA							
All gauge sticks are clearly legible with units on a $1/16^{\omega}$ inch scale.				🗆 Yes 🗆 No 🗆 NA					
Allina	dequate sticks have been removed from the facilit	🗆 Yes 🗆 No 🗆 NA							
Groundwater Monitoring				Inspection Results					
All ball	ers used at this facility are operable and in good o	ondition.		Yes No NA					
Clear v	vater can easily be seen in the bailer and easily dis	stinguished fro	om product.	Yes No NA					
Allina	dequate ballers have been removed from the facil	lity and dispos	ed of.	Yes No NA					
	Vapor	Monitoring							
Aıı	vapor monitoring equipment used for leak deter	ction must be	Inspected / certifie	ed annually by a 3 rd party.					
	Certificate of Calibration is								
3 rd Party	Company	Evaluator Name							
3 rd	Address	Phone Number Date of Calibration by 3 rd party							
	Owner or Operator								
Vapor Meter	Manufacturer and Model								
Val	Serial Number								
	Third Party Certificate of Cali	bration attacl	ned?	🗆 Yes 🔲 No					
Comm	ients:								

Annual Handheld Release Detection Equipment Inspection

- May seem pointless
- Fresh fuel takes time to darken.



Monthly Walk through Inspections

- Not every leak will be caught using typical leak detection methods.
- EPA realizes this (or so I think)
- The push for the tried and true:
 - Monthly Maintenance Walk throughs
 - Goes a long way



Monthly Walk through Inspections

- Recommended section is
 - Highly recommended
- Site Specific examples:
 - Check tanks for water or phase
 - Check labeling / paint on fuel lids
 - Break-a-ways in good condition?
 - STP cycling ON / OFF properly?
- Doing more <u>IS</u> the only way to catch leaks that normal leak detection methods will NOT catch.

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUAL	ITY.
MONTHLY (30 DAY) WALKTHROUGH INSPECTION	

- This form maybe utilized to document UST monthly walkthrough inspections.
- Monthly walkthrough inspections are required to be implemented by 10/5/2021.
- Additional training may be obtained by attending the MDEQ Compliance Manager Course
- Should MDEO find that all issues were not logged or reconciled you may be subject to penalties

Should MiDEQ II	nu that all issues we	C HOLIOSSC	u or recom	ched you may be subject to pena	nues.				
	UST Facility			Person Conducting Inspection					
Facility Name		MDEQ Facility	ID #	Inspector's Name					
Physical Address				Date of Inspection					
		Generali	zed Inspec	tion Procedure					
➤For each UST core	mponent listed, visua	ally inspect	it for dama	ge and proper operation.					
				Il records and/or equipment to					
			-	hat must be reported to MDEQ a	as a susp	ected re	lease.		
Log all issues ob:	served, indicate the a			ate the issue was resolved.					
	1			ts (Required)					
Component					ection R	esults			
	All liquid or debris has been removed.				Yes	No No			
		-	oles, crack	s, or other damage that may	🗆 Yes	🗆 No			
Spill Bucket	cause the bucket								
				round the fill riser are tight.	Yes	No No	_		
	The interstitial space on double walled spill bucket is dry				□ Yes	No No			
Fill Cap	Fill cap is in good condition and seals tightly onto the fill pipe.				Yes	No No	-		
Fill Pipe Drop tube device is present, installed, and there are no sticks or			-	🗆 Yes	🗆 No				
	other obstruction								
				ommended)					
				pumps are turned on.	□ Yes	No No	-		
	bserved at all the S		pumps are	e turned on.	□ Yes	No No			
	ly stocked and ade				□ Yes	No No			
				nditions such as dispensers	🗆 Yes	🗆 No			
	ow flow or water in		o the tank	•					
L	isual or unexplainal				Yes	No No	-		
	on site have been				Yes	□ No			
		observed a	and recond	ciled on the previous months	🗆 Yes	🗆 No			
walk through ins	pection report.						_		
Site Specific:					Yes	No No			
Site Specific:					🗆 Yes	🗆 No			
		Incider		Reconciliation					
De	scribe the Issue		Des	cribe the Action Taken to Resolv	/e	Date R	esolved		

Monthly Walk through Inspections

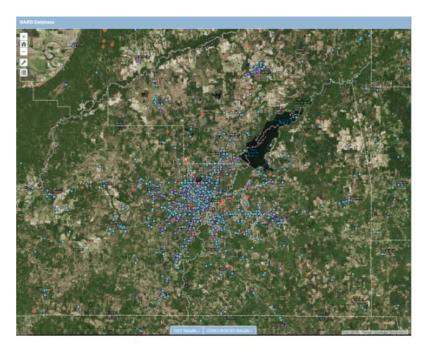
- Requires review of leak detection records.
- This can be done by you.
- Your obligation is to: Notify the tank owner of issues.
- Tank owner is to:
 - report in 24 hrs to DEQ.
 - Take action to address or fix the issue.

Inspection of	Leak Detection Equipment and D	ocuments (Required)	Facility ID#			
	All Methods			Inspe	ection Re	sults
	licable reports, tests, or equipm	ent related to leak detect	ion at this	Yes	No No	
facility.						
	ent Tank Owner or Responsible F	, ,	detection	Yes	🗆 No	
	be reported to MDEQ as a suspe					
Method Used		ure that:				
Monitoring	All necessary monitoring well	is were checked and obs	ervations	Yes	No	
Wells	properly recorded.			_	_	_
	The ATG is operating with		operating	C Yes	No No	
Automatic Tank	conditions related to leak deter			_	-	-
Gauging	0.2 gph leak tests indicate pass	-		Yes	No	
	A passing 0.2 gph leak test was		all failing	C Yes	□ No	
	or inconclusive 0.2 gph leak tes			_	_	-
	The ATG is operating with		operating	C Yes	No	
Electronic Line	conditions related to pipe leak	_	-	-		
Leak Detectors	All 0.2 gph pipe leak tests show	Yes Yes	No			
	A passing 0.2 gph leak test was obtained (within 24 hrs) of all					
	failing/inconclusive 0.2 gph lea				_	-
Visual Interstitial	Visual Interstitial Report indicates that there is no I			Yes	No	
Monitoring	All water observed has been re			Yes	No No	
	All fuel observed has been rem		-	Yes	No No	
	Monthly sensor status report in	ndicates all sensors are no	t in alarm	Yes	No	
Electronic	and functioning properly.	_	_	-		
Interstitial	All alarms for the month have	C Yes	□ No			
Monitoring	monthly Electronic Interstitial	_				
	All water observed has been re			C Yes	No	
	All fuel observed has been rem			Yes	No No	
Statistical	Tank checked for water, no w	ater is present, and fuel	levels are	Yes		
Inventory	being properly recorded.	and 1 1 (1			_	_
Reconciliation	Fuel levels were submitted to a		ysis.	Yes	No No	
	The previous month's record indicates passing results.			Yes	No	
Other:		land the and Description		Yes	No	
Da	Additional Incid scribe the Issue	lent Log and Reconciliation Describe the Action Tal	on to Posel		Date Re	coluged
De	SUIDE THE ISSUE	Describe the Action Tai	to Resol	ve	Date Re	solved

UST Technical Regulation Changes Other

- 10/5/18
 - Cannot Install / Modify or Repair ball floats.
 - Tank owners required to report failures (all tests or monthly leak detection) within 24 hours if they can't get a pass
 - Equipment failures repairs required within 90 days.
 - To request extension, you "contractor" must request it

Interactive Map



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Search for All UST Facilities

Online Reports

The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Select Report:

Scheduled Inspections

Reset

Select Format Type:

PortableDocFormat

Muster Database

- <u>http://muster.deq.state.ms.us/m</u> <u>usterweb/</u>
- Use map to zoom in on sites to figure out Facility ID #
- Run reports very useful

Online Reports

Powerful tools you should be using.

Select Report:

Scheduled Inspections Notification Form For Facility Notification Form for Owner Owners (Tank Count > 5) WEBPSI Letter (Subsurface Investigation letters.. LUST Status Report By Status By Group Current CAP Summary Per Owner/Facility LSR Report Counts Facilities & Owners In Violation with Details Inspection Compliance Requirements

- Select Report:
 - Scheduled Inspections
 - Notification Form For Facility
 - Lust Status by Group
 - Inspection Compliance Requirements
 - Current Cap Summary
 - Facility & Owners in Violation
- Once selected most of these will pop up a spot to put in the Facility ID #

Notification form for facility

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Figure out: Leak detection method, type of tank / pipe, capacity, permanently closed tanks.

Online Reports

The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Select Report:

Notification Form For Facility

Select Format Type:

PortableDocFormat

Continue Download

Reset

Facility ID: :	11935
----------------	-------

Notification Fo	rm For Facility #11935							
FACILITY ID NUMBER : 11935	OWNER'S ID :							
OWNERSHIP OF TANK(S):	LOCATION OF TANK(S):							
	Griffis Truck Stop							
	25357 Highway 330							
Jackson, MS 39288	Tillatoba, MS 38961							
Owner Phone : (601 County : Yalobusha								
Tank # 1 For Facility 11935								
Status : Currently In Use	Capacity : 20000 Substance : Diesel							
Tank Material of Construction :	Date Closed :							
Epoxy Coated Steel	Closure Type :							
Cathodically Protected Tank Installed : 09/01/1996								
	Spill Protected: Yes							
	Overfill Protected: Yes							
Tank Release Detection: Automatic Tank Gauging								
Automatic Tank Gauging								
	Pipe # 1 For Tank # 1							
Status : Currently In Use	Pipe Type : Pressurized							
Status : Currently In Use Pipe Material of Construction :	Pipe Type : Pressurized							
Pipe Material of Construction :	Pipe Type : Pressurized Pipe Installed : 09/01/1996							
Pipe Material of Construction : Flexible Plastic	Pipe Type : Pressurized Pipe Installed : 09/01/1996 Date Closed :							
Pipe Material of Construction : Flexible Plastic Double-Walled	Pipe Type : Pressurized Pipe Installed : 09/01/1996 Date Closed :							

Did the owner report those high vapors?

Page 1 of 197

If its not listed here, probably not.

Online Reports

The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Select Report:

LUST Status Report By Status By Group

Select Format Type:

PortableDocFormat

Continue Download

Reset

Lust Status :	Active	~
Group By :	City	~

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Leaking Underground Otenens Tenk List All with Ne Comments
Leaking Underground Storage Tank List All with No Comments

Active LUST Sites by City

12/9/19

Project Manager :	John Traweek			
Facility ID: 7303	Owner	Location	Contractor	Last LDR:
Event#: 1 Monroe Co. EUD p = 8 Confirmed : 4/12/18	Dutch Oil Company PO Box 2323 Columbus, MS 39704 (662) 327-5202	Highway 45 Shell Highway 45 North - 708 High Extension Aberdeen, MS 39730		Last GWS: Last PTT: Active USTs 4 Start Date : 09/01/2016

Activities :	Start Date	Documents :	Due	Extension	Received To Fin.
LDR Vapor Monitoring	12/5/19				

Inspection Compliance Requirements

Records MDEQ expects to see at the time of Inspection. <u>Note:</u> These are NOT updated for new regs. It's based on current registration so if registration is not right for the site.

Online Reports

The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Select Report:

Inspection Compliance Requirements

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Select Format Type:

PortableDocFormat

Continue Download

Reset

Facility ID: : 11935

UST Facility Inspection Compliance Requirements

Griffis Truck Stop, 25357 Highway 330, Tillatoba, MS, Facility ID #11935

The following records must be made available for our review at the time of the inspection:

* Automatic tank gauging records (Provide copies of the previous 12 months of 'leak test' records)

* Inspection of the automatic tank gauging system (Provide a copy of the last inspection of the automatic tank gauging system)

* Inspection of the overfill prevention devices (Provide a copy of the last inspection of the overfill prevention devices)

- * Precision Tightness Test record for the piping (Provide a copy of the most recent precision tightness test for pipes)
- * Testing of Shear valve operation (Provide a copy of the last record of shear valve operation testing)
- * Testing of the automatic line leak detectors (Provide copies of the last two test records of automatic line leak detectors)
- * Testing of the spill containment buckets (Provide a copy of the last test of the spill containment buckets)

* Testing of the tank cathodic protection system (Provide copy of the last test record of the cathodic protection system)

MDEQ Schedule Inspections

Pending means its definitely scheduled. MDEQ will be there. Be ready.

OWNER NAME

Huong V Tran

Brijesh V Patel

Jenni Brown

David Wells

Darpan Patel

Thompson Nguyen

Pilot Travel Centers LLC

Natalie N Koenenn

Phuong T Dang

Richard Harris

Barry Broome

Chay Kang

Discount Zone LLC

Dixie Properties LLC

Keith And Vicki Rhodes

Hebert Properties LLC

Betty Domonousky

Scheduled means it's in the process of being scheduled. It's coming up but possibly

not that day or time. Call your MDEQ regional inspector.

STATUS

PENDING

SCHEDULED

SCHEDULED

Online Reports

The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Scheduled Inspections	~
Select Format Type:	
PortableDocFormat	~

Continue Download

Reset

Scheduled Inspections

Sam McElveen

<u>ID</u>	FACILITY	CITY	COUNTY	DATE	TIME
11977	Discount Zone LLC	Picayune	Pearl River	12/10/2019	9:30
6590	Asian Square	Picayune	Pearl River	12/10/2019	11:00
13014	Dixie Depot # 1	Moss Point	Jackson	12/11/2019	9:30
12092	Vrishab Inc	Moss Point	Jackson	12/11/2019	11:00
2401	Tiger Discount Gas	Biloxi	Harrison	12/12/2019	9:00
3083	Cruthirds Country Corner Store LLC	Ocean Springs	Jackson	12/12/2019	10:30
12722	Cabin Store LLC	Wiggins	Stone	12/17/2019	9:30
744	Country Kwik-stop	Gulfport	Harrison	12/17/2019	11:00
7830	East Bank Convenience Store	Pascagoula	Jackson	12/18/2019	9:30
4086	Mstar #1	Pascagoula	Jackson	12/18/2019	11:00
9077	Big P Mini Mart	Long Beach	Harrison	12/19/2019	9:30
12411	P T Mini Mart	Ocean Springs	Jackson	12/26/2019	9:30
12245	Gulf Coast Express Mart	Ocean Springs	Jackson	12/26/2019	11:00
3080	Broome's #2	Ocean Springs	Jackson	12/26/2019	12:30
4329	Corner Mart	Moss Point	Jackson	12/31/2019	9:30
4054	Pilot Travel Center #586	Moss Point	Jackson	12/31/2019	11:00
12906	Kodie's Junction	Kiln	Hancock	01/09/2020	9:30

CAP summary: Should list date of last known tests.

Not currently working.

Online Reports

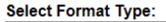
The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Select Report:

Current CAP Summary Per Owner/Facility

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Excel

Continue Download

Reset



Owner Name :



According to our records, it is necessary for you to conduct the following tests and/or monitoring at the referenced facility. You must accomplish each of the listed tests and routine monitoring requirements to maintain compliance.



FACILITY I.D. #



Facilities & Owners in Violation

Keep track of Deadlines. Contact the right MDEQ manager to figure out what to do.

Online Reports

The following are selected reports you may view by selecting a report from the dropdown box, choosing the appropriate format type, and clicking the download button.

Select Report:

Facilities & Owners In Violation with Details

V

Select Format Type:

PortableDocFormat

Download

12/9/2019

Owner Name 50 Strong 84 GasExpress LLC A T & T Communicatic Abdul Rzag Abdula Abdulaziz Saleh dba J Abdulhakim Ahmed Abdullah N Obaid Adams County Board Adcox & Gravson Inc (Akwinder Kaur Algazali Family Inc Alma Holman & Willa H Alonzo Evans Amaan Allahi And Sale Amandeep Singh Amarjit Singh

Facilities & Owners in Violation

Fac ID	Facility Name	OCE Status	Due Date	Override Date	Manager
7808	C & L Convenience Store	Red Tag	11/10/12	6/30/11	Scott Slater
7976	84 Gasexpress LLC	Red Tag	10/25/19	12/2/19	Brandon St. Clair
10648	Gulfport Radio Relay Station (m	New	1/13/20		Brandon St. Clair
9850	Aiden Food & Fuel	2nd Notice	6/20/18	6/27/18	Scott Slater
3757	JJ's EZ Stop	2nd Notice	8/8/18		Brandon St. Clair
7543	NIAS Express	Red Tag	4/7/18	3/8/18	Scott Slater
5605	Express Lane Dixon	2nd Notice	12/26/19		Brandon St. Clair
12093	Adams County Sheriff's Office	2nd Notice	12/27/19		Brandon St. Clair
12097	Adcox & Grayson Inc dba South	2nd Notice	12/27/19		Brandon St. Clair
12112	A B Food Mart	2nd Notice	4/18/18	6/17/18	Scott Slater
1085	Algazali Family Inc	Red Tag Pendi	11/2/19	11/14/19	Scott Slater
2791	Holman's Gas Mart	Red Tag Pendi	2/27/19	4/6/19	Scott Slater
7862	Speedway	Red Tag	7/8/15		Brandon St. Clair
7554	B-quik 99	Red Tag	5/14/11		Scott Slater
12647	Best Stop 6	Red Tag	12/21/19		Brandon St. Clair
12683	Richi	2nd Notice	7/24/19	7/24/19	Scott Slater

Accessing Forms & Info

Resources

- > New Owner Information
- > UST Requirements
- > Tank Fees
- > Compliance & Enforcement (C&E)
- > C&E Positions
- > Operator Training
- > Contractor Certification
- > Assessment & Remediation
- > Forms & Publications
- > UST Online Search
- > Delivery Prohibition List
- > Aboveground Storage Tanks
- > Frequently Asked Questions (FAQs)
- > Public Record Compliance/ Release Summary

- <u>https://www.mdeq.ms.gov/water/groundwater-assessment-and-remediation/underground-storage-tanks/</u>
- Forms & Publications
- All other info
- If you choose to make your own forms:
 - At a minimum MDEQ needs to review and approve.
 - They should include all relevant questions included on MDEQ's form
 - For tests where MDEQ does not have a form, you should use the Manufacturers (Ex. Tank tightness tests)

Monthly Monitoring Tags

- Used by DEQ to see if your checking what your supposed to.
- Maybe used for:
 - Monthly monitoring
 - Annual testing
- Don't take offence to if you see one.
- Integrity is difficult to enforce.
- We are doing you a favor by trying to.
- Watch for them. Follow instructions on cards.

Property of MDEQ

This is a test of your monthly monitoring at this location. *To complete this test*:

- **1.)** Please call Wesley McCain 662-832-7106 to report as found. (Leave voicemail if no one answers)
- 2.) Attach this tag to monthly monitoring report.

If you do neither of these, it may result in enforcement action being taken by MDEQ.

Thank you for your time and work completed.



Red Tagging





- Mistakes do happen.
- Some are completely avoidable.
- If they pose a significant risk
- MDEQ will red tag the tank or tank associated with the pipe.

