

**NJDEP Hazardous Waste/UST
Compliance & Enforcement**

*Underground Storage
Tank Inspection
Program*

THE BIG 6

12/98 CRITERIA





06/12/2007 12:46

UNDERGROUND STORAGE TANK SYSTEMS

1/ REGISTRATION

All REGULATED TANKS must be registered w/the Department:

A regulated tank routinely contains hazardous substances and is > 10% by volume (tank & piping) underground

Non-Residential Heating Oil > 2,000 gallons
Compartmented Tanks

Three year billing cycle

Fees AND Registration/Billing form MUST be submitted

A CURRENT UST REGISTRATION CERTIFICATE MUST BE AVAILABLE

2/ TANK INSURANCE (FA)

All REGULATED TANKS must have insurance for “the purpose of remediation and for compensating third parties for bodily injury and property damage”.

Coverage Amounts:

< 10,000 gallons throughput per month:
\$250,000

> 10,000 gallons throughput per month:
\$1,000,000

Hazardous substances other than motor fuel:
\$1,000,000

PROOF OF CURRENT FA MUST BE AVAILABLE



**DIVISION OF REMEDIATION SUPPORT
UNDERGROUND STORAGE TANK PROGRAM
P.O. BOX 028
TRENTON, NEW JERSEY 08625-0028
Phone: (609) 633-1464**



**UNDERGROUND STORAGE TANK SYSTEMS
REGISTRATION CERTIFICATE**

<p>The Department of Environmental Protection hereby grants this registration to operate and maintain the Underground Storage Tank System(s) described below in accordance with the laws and regulations of the State of New Jersey. This registration is revocable with due cause and is subject to the limitations, terms and conditions pursuant to N.J.A.C. 7:14B.</p>		<p>Approval Date: 01/24/2008</p>												
		<p>Expiration Date: 12/31/2010</p>												
<p>Facility ID: 012345</p>	<p>Facility Contact (Operator): Joseph Smith (201) 555-1234</p>	<p>Total Number of Tanks: 3</p>												
<p>Registration Activity ID: UST070001</p>		<p>Total Capacity (Gallons): 26000</p>												
<p>Facility Address: JOE'S GARAGE 444 MAIN ST ANYWHERE, NJ 02854</p>		<p>Owner: JOSEPH SMITH 444 MAIN ST ANYWHERE NJ, 02854</p>												
<p>Approved Tanks and Products Stored:</p> <table border="1"> <thead> <tr> <th>TANK No.</th> <th>TANK CAPACITY</th> <th>TANK CONTENTS</th> </tr> </thead> <tbody> <tr> <td>5175</td> <td>8000</td> <td>Unleaded Gasoline</td> </tr> <tr> <td>5176</td> <td>8000</td> <td>Light Diesel Fuel (No. 1-D)</td> </tr> <tr> <td>5177</td> <td>10000</td> <td>Unleaded Gasoline</td> </tr> </tbody> </table>			TANK No.	TANK CAPACITY	TANK CONTENTS	5175	8000	Unleaded Gasoline	5176	8000	Light Diesel Fuel (No. 1-D)	5177	10000	Unleaded Gasoline
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5175	8000	Unleaded Gasoline												
5176	8000	Light Diesel Fuel (No. 1-D)												
5177	10000	Unleaded Gasoline												
<p align="center">This Registration Must Be Available for Inspection at the Facility AT ALL TIMES</p>														

We don't need no stinkin'
registration!





UNDERGROUND STORAGE TANK FACILITY CERTIFICATION QUESTIONNAIRE

FACILITY UST # (PROGRAM INTEREST ID): _____

Completion of this Registration Questionnaire will satisfy the registration requirements of the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21 et seq., and the Underground Storage Tank Rules N.J.A.C. 7:14B et. seq.

Check appropriate box

- A. This is a registration of a proposed or newly installed underground storage tank. (This form must be filed at least 30 days prior to operation)
- B. This is a registration of an existing underground storage tank not presently registered.
- C. This is a correction or amendment to an existing facility registration. (Check type of change below)
- D. There have been no changes to the facility registration since last submittal. (Complete Section A, C & E)

If "C" is checked above, please check the appropriate type of change(s) below

- | | | |
|--|--|---|
| <input type="checkbox"/> Facility Name and/or Address Change | <input type="checkbox"/> Type of Product(s) Stored | <input type="checkbox"/> Financial Responsibility Change (Including Policy Renewal) |
| <input type="checkbox"/> Owner Name and/or Address Change | <input type="checkbox"/> Substantial Modification(s) (see 14B) | <input type="checkbox"/> Sale or Transfer (Complete entire form) |
| <input type="checkbox"/> Facility Operator and/or Address Change | <input type="checkbox"/> Tank(s) and/or Piping Changes | <input type="checkbox"/> Other (please specify) |
| <input type="checkbox"/> Owner Contact Person Change | <input type="checkbox"/> Closure (Complete Section B | |
- Questions 1, 4, 5, 12C)

SECTION A - GENERAL FACILITY INFORMATION

1. Facility Name _____

2. Facility Location _____

Address Line 1 _____

Address Line 2 _____

City or Municipality _____

_____	[N J]	_____ - _____	_____	_____
COUNTY	STATE	ZIP CODE	BLOCK	LOT

3. Facility Operator _____

ORGANIZATION (If applicable, e.g. Company) or INDIVIDUAL

Contact Person _____

PERSON

TITLE

PHONE NUMBER (INCLUDE AREA CODE & EXT)

E-MAIL ADDRESS

Operator Address _____

(if different than #2)

ADDRESS LINE 1 (NUMBER AND STREET)

ADDRESS LINE 2 (e.g. PO BOX, SUITE)

CITY OR MUNICIPALITY

STATE

ZIP CODE

4. Tank Owner _____

(Organization)

Contact Person _____

PERSON

TITLE

PHONE NUMBER (INCLUDE AREA CODE & EXT)

E-MAIL ADDRESS

Tank Owner _____

Address

ADDRESS LINE 1 (NUMBER AND STREET)

ADDRESS LINE 2 (e.g. PO BOX, SUITE)

CITY OR MUNICIPALITY

STATE

ZIP CODE

UNDERGROUND STORAGE TANK SYSTEMS

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> 10,000 gallons throughput per month:
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Hazardous substances other than motor fuel:
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**PROOF OF CURRENT FA MUST BE
AVAILABLE**

3/ RELEASE DETECTION & MONITORING (RDM)

TANKS:

ATG

SIR

Interstitial

Tank Tests (limited application)

Manual Tank Gauging (2,000 gallons or less)

Inventory Control w/ Monthly Reconciliation

PIPING:

SIR

Interstitial

Pressure or Wireless Monitoring Devices (.1, .2 & 3 gph)

Mechanical Line Leak Detector (3 gph)

Line Tightness Test

PROOF OF RDM MUST BE AVAILABLE

4/ CORROSION PROTECTION

METALLIC TANKS & PIPING

Passive System:

Degradable anodes fitted to tank ends or anodes wired to the tank shell. Spike anodes wired to piping

Impressed System:

Rectifier wired to anode array to protect tanks and/or piping

PROOF OF 3 YEAR TEST & 60 DAY PANEL TEST (RECTIFIER)

Release Detection Monitoring (tanks)





Summary of Options

Common

- ◆ Automatic Tank Gauging
- ◆ Interstitial Monitoring

Less Common

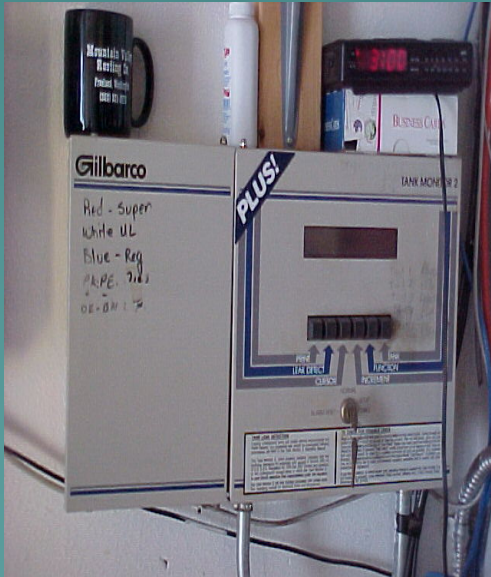
- ◆ Inventory Control and Tightness Testing
- ◆ Statistical Inventory Reconciliation

Uncommon

- ◆ Manual Tank Gauging
- ◆ Soil Vapor Monitoring
- ◆ Groundwater Monitoring



Automatic Tank Gauging



ATG Probes



General Requirements

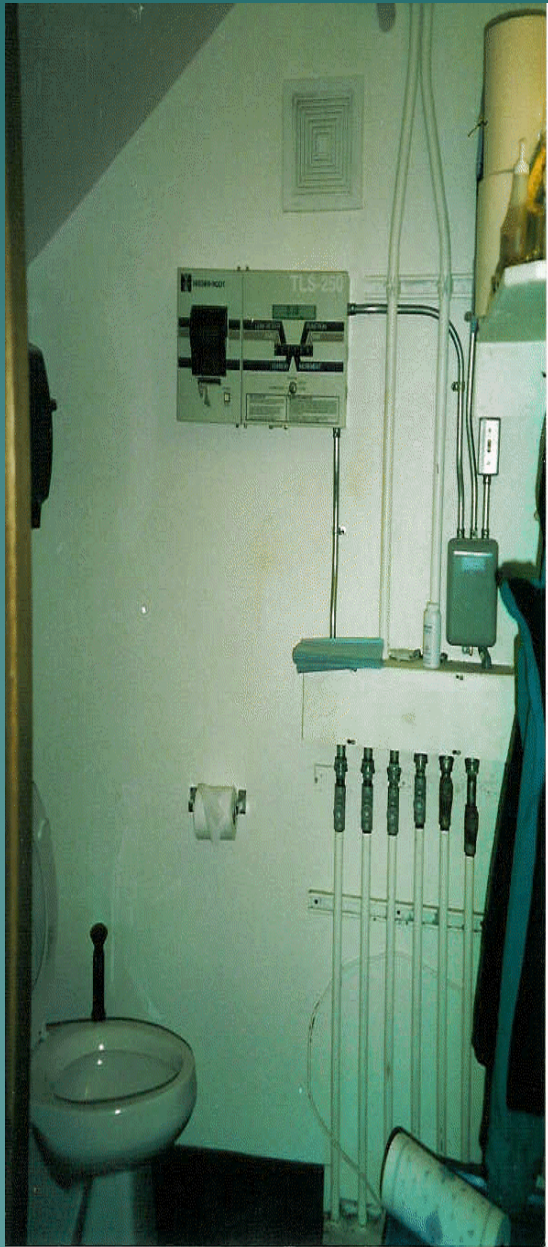
- ◆ Must test for leaks at least every 30 days.
- ◆ Can detect a 0.2 gph leak.
- ◆ Must be a valid, passing test. (50% or greater volume, unless CSLD/SCALD is being used)
- ◆ Is third party approved for the application.
- ◆ Must have maintenance performed per Manufacturer specifications.
- ◆ Must maintain last 500 months of tests for inspection.
- ◆ 95 % probability of finding a leak and 5 % of a false alarm.
- ◆ Must measure for water monthly.
- ◆ If the station is open 24/7 or if tanks are manifolded, a CSLD or SCALD chip may be needed to pass a periodic test.
- ◆ For manifolded tanks, other option would be to manually shut off the siphon.

CSLD

Continuous Statistical Leak Detection

- ◆ 3rd Party Certified from 5-95% tank volume
- ◆ Maximum separate or combined tank volume is 38,170 gallons
- ◆ Veeder-Root chip compatible with TLS-300 and 350 models
- ◆ Also an option for stations that keep low volume of higher octane fuels

Find the Tank Gauge

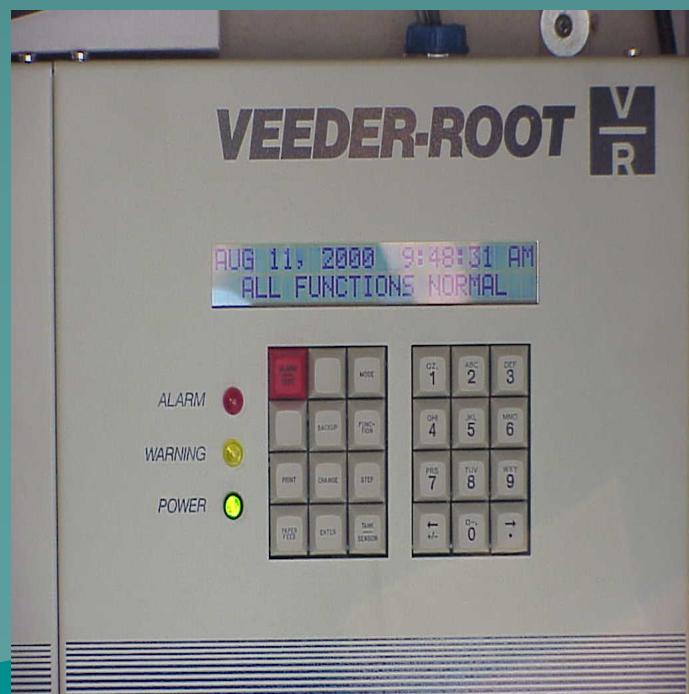




Genius !

Interstitial Monitoring

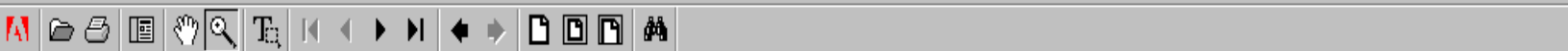
- ◆ Double walled tanks **only**
- ◆ Can be continuous or every thirty days
- ◆ Annular Sensors (liquid only) or sticking
- ◆ Location commonly depends on construction of the tank
- ◆ Sensors connect to an ATG panel
- ◆ Liquid Status (hit function button until you see that)



Statistical Inventory Reconciliation

- ◆ AKA – SIR
- ◆ Daily stick readings maintained in a log along with readings from dispenser totalizers sent to a third party.
- ◆ The certified third party plugs the numbers into a program and give a resulting pass, fail or inconclusive. This is a .2gph form of monthly monitoring.
- ◆ A secondary form of monitoring is required in case of failures of inconclusive results.

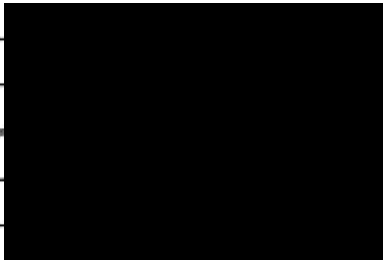
Houston, we have a problem



WARREN ROGERS ASSOCIATES, INC.
747 AQUIDNECK AVENUE, MIDDLETOWN, RHODE ISLAND 02842
1-800-WRA-SIRA

MONTHLY STATISTICAL INVENTORY RECONCILIATION (SIR) REPORT

04/11/2008

TANK OWNER		_____
FACILITY NAME		_____
TANK LOCATION		_____

Tank ID-Product	Tank Capacity	Period Covered	Threshold	Minimum Detectable Leak Rate	Measured Leak Rate	System Status Pass, Fail Inconclusive	Monitoring Standards/Cause
	gallons		gph	gph	gph	P,F,I	
1 -R	12000	03/08/2008-04/07/2008	0.070	0.140	0.00	P	NO LOSS
2 -S	6000	03/08/2008-04/07/2008	0.085	0.170	0.52	F	LOSS
3 -P	6000	03/08/2008-04/07/2008	0.015	0.030	0.36	F	LOSS



Precision Testing

- ◆ This is a .1 gph method of testing.
- ◆ Must be performed by a state certified contractor.
- ◆ Results are only valid for 30 days.

Pressurized Piping

- ◆ Greater/faster dispensing ability (more dispensers, more customer volume)
- ◆ Piping is always product bearing and is always pressurized (greater pressure when turbine turns on).
- ◆ Monitoring requirements: some form of monthly monitoring or an ANNUAL test.
- ◆ Also, a Line Leak Detector is required to be installed and tested annually.
- ◆ Mostly commercial facilities

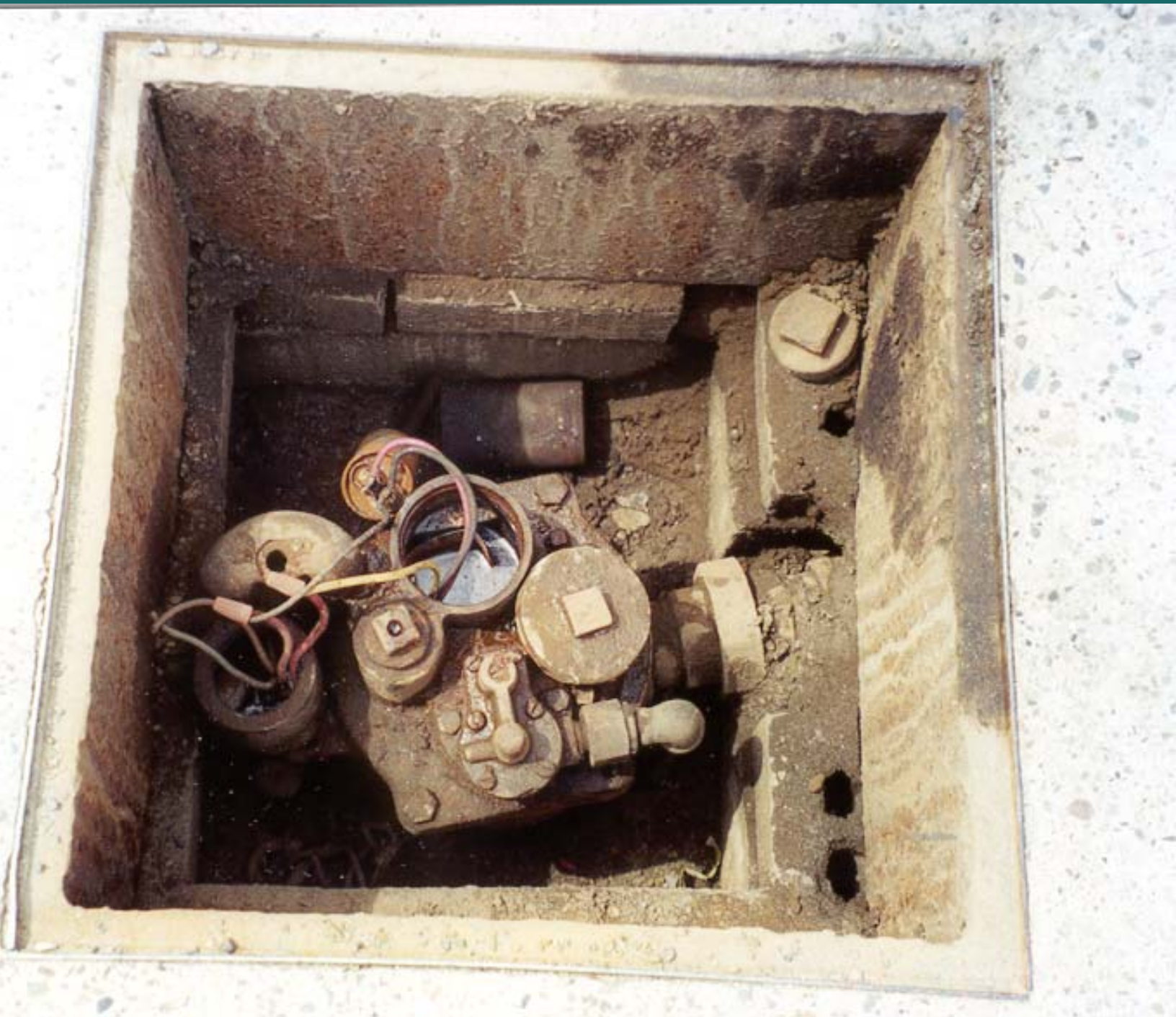








02/27/2008 16:39





Release Detection Monitoring

Piping

The background is a solid teal color. At the bottom right, there is a silhouette of a mountain range in a slightly darker shade of teal.

Pressurized Piping

- ◆ Line Leak Detectors
- ◆ Interstitial
- ◆ Annual precision test
- ◆ Pressure Monitoring
- ◆ SIR

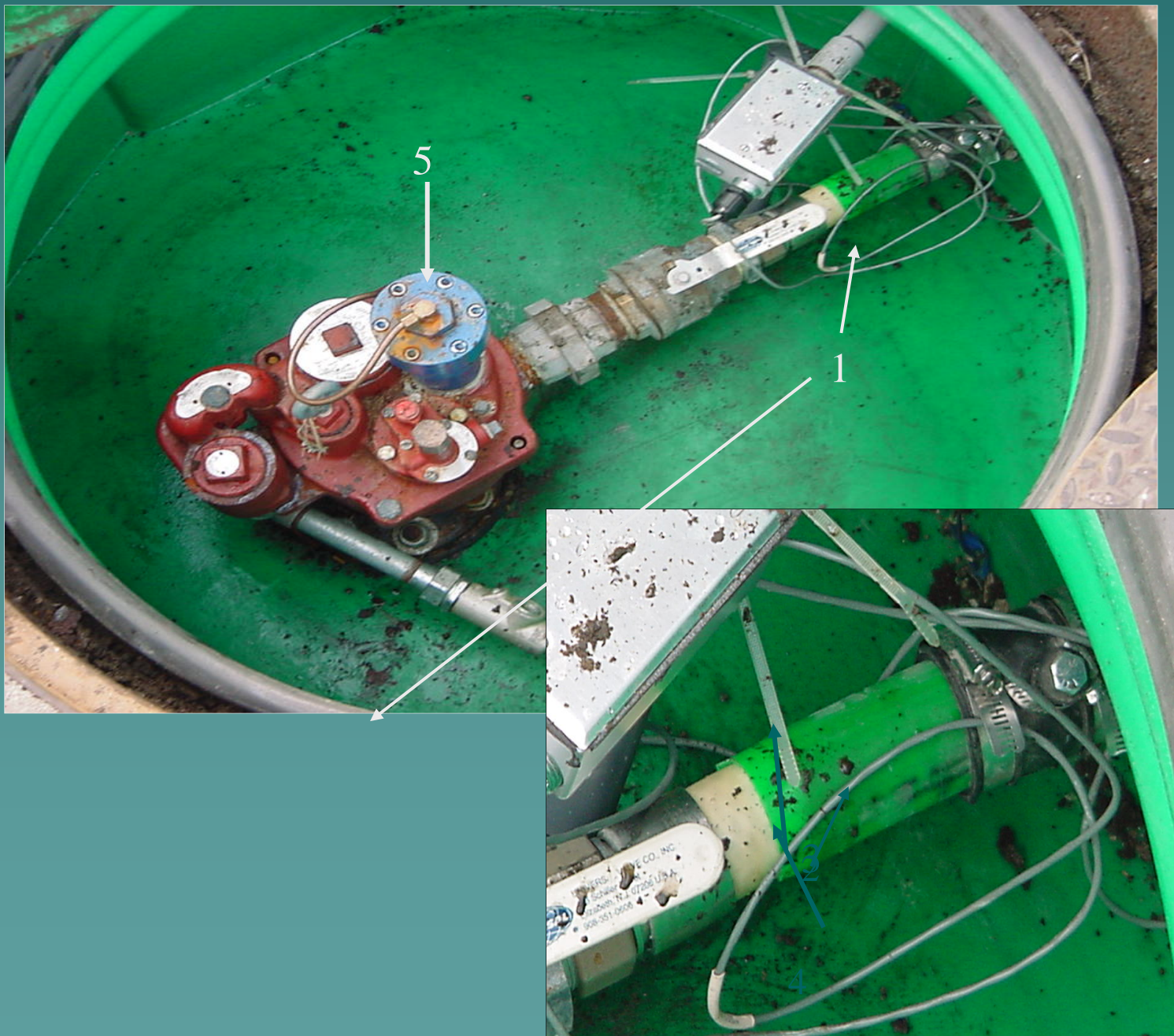
Another view of a “Red Jacket®” Quantum STP. The double-wall fiberglass line (1) is monitored by a liquid sensor (2) and a pressure transducer (3). The pressure transducer is capable of detecting line leaks of .1, .2 and 3 gph which eliminates the need for a mechanical LLD. Note the manway (4) which suggests a lined tank. The test boot (5) must be loose which will allow a leak from the piping to drain back to the sump to be detected by the liquid sensor (2). **Inspection Significance:** Verify the method of UST leak detection, piping construction and document that the pressure transducer and sump sensor have been checked in accordance with the manufacturer’s recommended schedule. Ensure the boot clamps are loose. See definitions: Test Boot, CPT, STP, Liquid Sensor, Pressure Transducer.



A typical Exxon STP sump that has the following equipment: liquid sensor (1), single wall piping (2), a Veeder-Root pressure transducer (3) and the required SwiftCheck®(functions as a check valve) (4). **Inspection Significance:** Make sure the SwiftCheck® (4) is present (see inset photo for close up view) . If it is not, the pressure transducer (3) is not capable of performing monthly line-leak detection (.2 gph). It can only perform the function of an automatic line-leak detector (3 gph). See next photograph for further information regarding the SwiftCheck®. Also, the functional element (5) must be disabled when using the Veeder-Root pressure transducer. In this photo the installation contractor has left the spring and check valve of the functional element (6) on top of the STP as evidence that the unit was disabled. Since single-wall piping is used, the liquid sensor is only monitoring the STP for leaks. Verify line construction type. See definitions: liquid sensor, ATG, STP sump, Simplicity, Swift Check, LLD and pressure transducer.

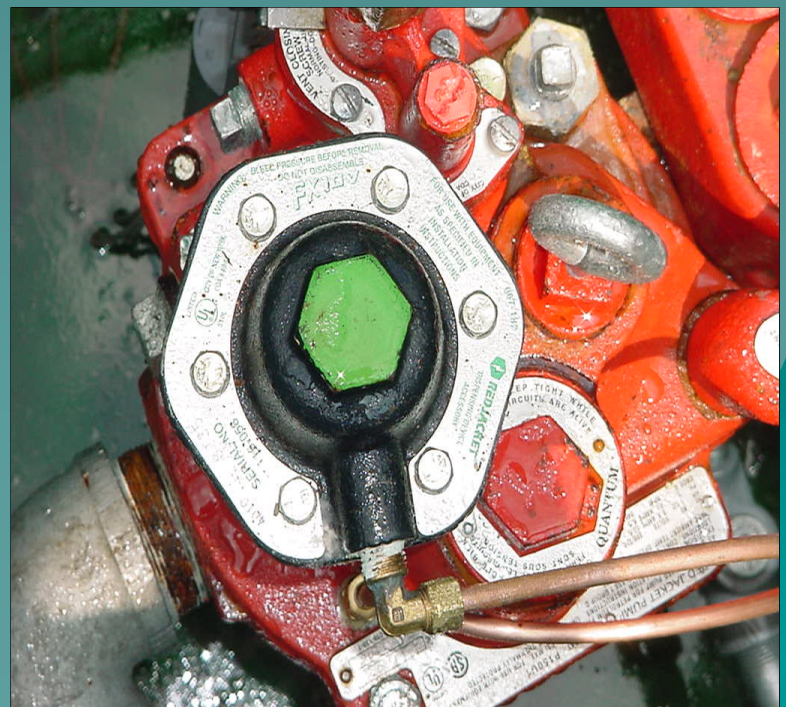
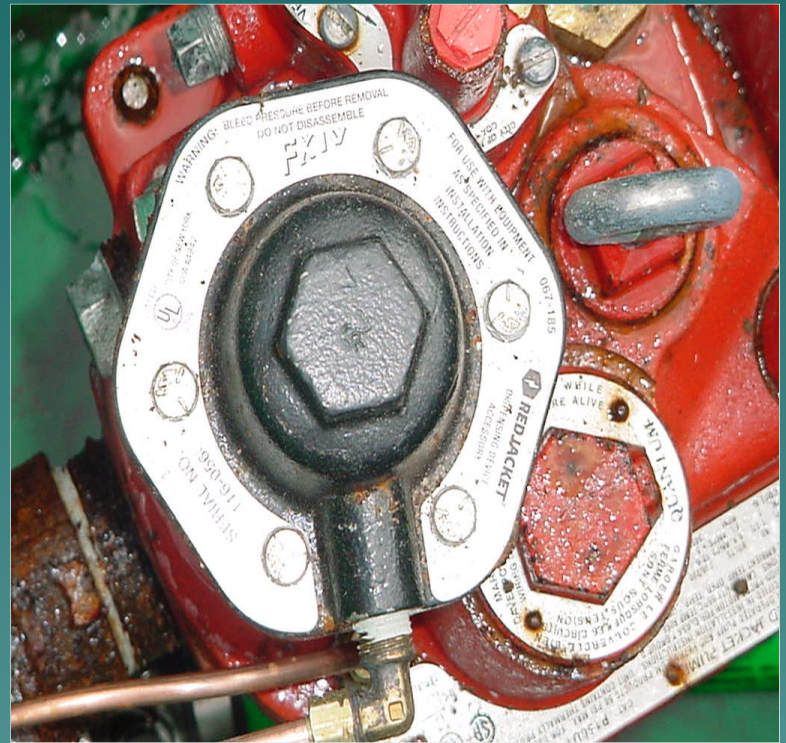


The product piping is Geoflex® double-wall flex pipe (1). A sump sensor for line leak detection is present but not visible in the photograph. **Inspection Significance:** The initial reaction is that the owner or operator is not conducting line leak detection with the sump sensor because the nipple on the test boot (2) is plugged with a bolt (3) and therefore a line leak to the interstitial area cannot reach the sump sensor. Upon closer inspection it must be noted that a portion of the outer wall (green) of the double walled piping has been removed at (4). The inner wall (tan) can be seen and the test boot had been slid back exposing the interstitial area of the piping so a line leak can reach the sump sensor. To test the interstitial space of the line the test boot is slid back over the open space at (4) and the clamps tightened. The bolt (3) is then removed and a test line can then be secured to the nipple to either pressurize the space or draw a vacuum on the space to run the test. In this case determine if the sensor is functioning and if the FE Petro mechanical LLD (5) has been tested annually as required.



Automatic Line Leak Detectors

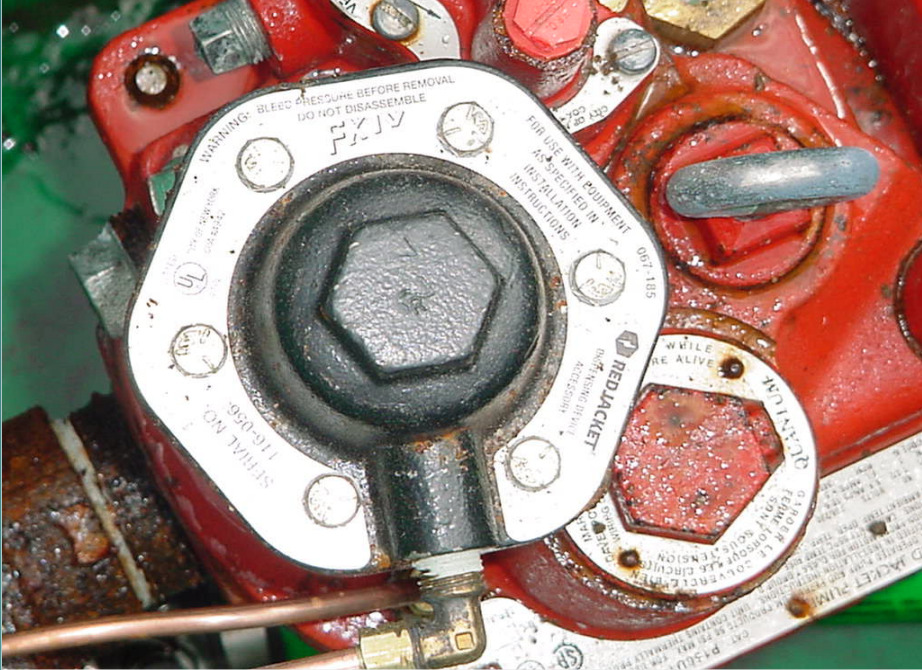
- ◆ Must be tested annually per manufacturer's specifications
- ◆ Plugged into the Submersible Turbine Pump (STP)
- ◆ Test for 3gph leak
- ◆ Required for ALL pressurized piping



This STP sump is located at a marina in Cape May. The purpose of the twin turbine installation is to service multiple dispensers at the dock area. The lines are double-wall Geoflex®. Also note that the tank system is manifolded to another diesel UST located adjacent to the photographed UST. This is evidenced by the manifold line (1). **Inspection Significance:** The method of line-leak detection can not be determined since no sump sensors are present. The owner or operator must document what monthly method of line-leak detection is being used. Also note that neither turbine has the required automatic line-leak detectors [plugged LLD port (2)] to meet the 3 gph leak rate for large releases. An NOV was issued for failure to perform required line-leak detection.



The mechanical LLD (1) is a “Red Jacket®” FXV series model FX1V and tests the lines to 3 gph. The FX1V is suitable for installation on all grades of gasoline STPs. The FX1V is quickly identified by the black color of the top and the silver identification label. The mechanical LLD (2) is a “Red Jacket” FXV series model FX1DV and also tests the lines to 3 gph. The FX1DV is suitable for installation on diesel fuel STPs. The FX1DV is quickly identified by the green color of the top and the silver identification label. **Inspection Significance:** The gasoline (black) and diesel (green) FXV mechanical LLDs are not interchangeable. If the facility dispenses both diesel fuel and gasoline under a pressurized system, confirm that the correct type of LLD has been installed on each STP if “Red Jacket” FXV series LLDs are used for automatic line leak detectors.



← 1

2 →



This sump is located at a truck stop which has four manifolded diesel tanks. All the product output lines (1) pictured in this sump run to the dispensers through the connections in this sump. The output line from the STPs (2) is fitted with a line-leak detector (LLD/"Red Jacket®") (3) which detects a leak of 3 gph or more. **Inspection Significance:** The test boot (4) has been pulled away from the outer pipe (5) of this double-wall fiberglass reinforced plastic system so a leak can be detected in the sump with a liquid sensor (present but not visible in this photo). The LLD must be tested every year and the owner or operator must have documentation supporting that the LLD has been tested and is functioning. Also note whether the perforations for the electrical conduit (6) are sealed and if the product sensors are set above or below this level. Department inspections at some site have found sumps with open perforations and the sump sensor set at a level above the perforations! See definitions: STP, STP sump, LLD, Red Jacket and test boot.



Interstitial

- ◆ Product tight secondary containment
- ◆ Double wall piping only
- ◆ Any test boots MUST be loose or open
- ◆ Liquid or discriminating sensors fixed to the bottom of the sump



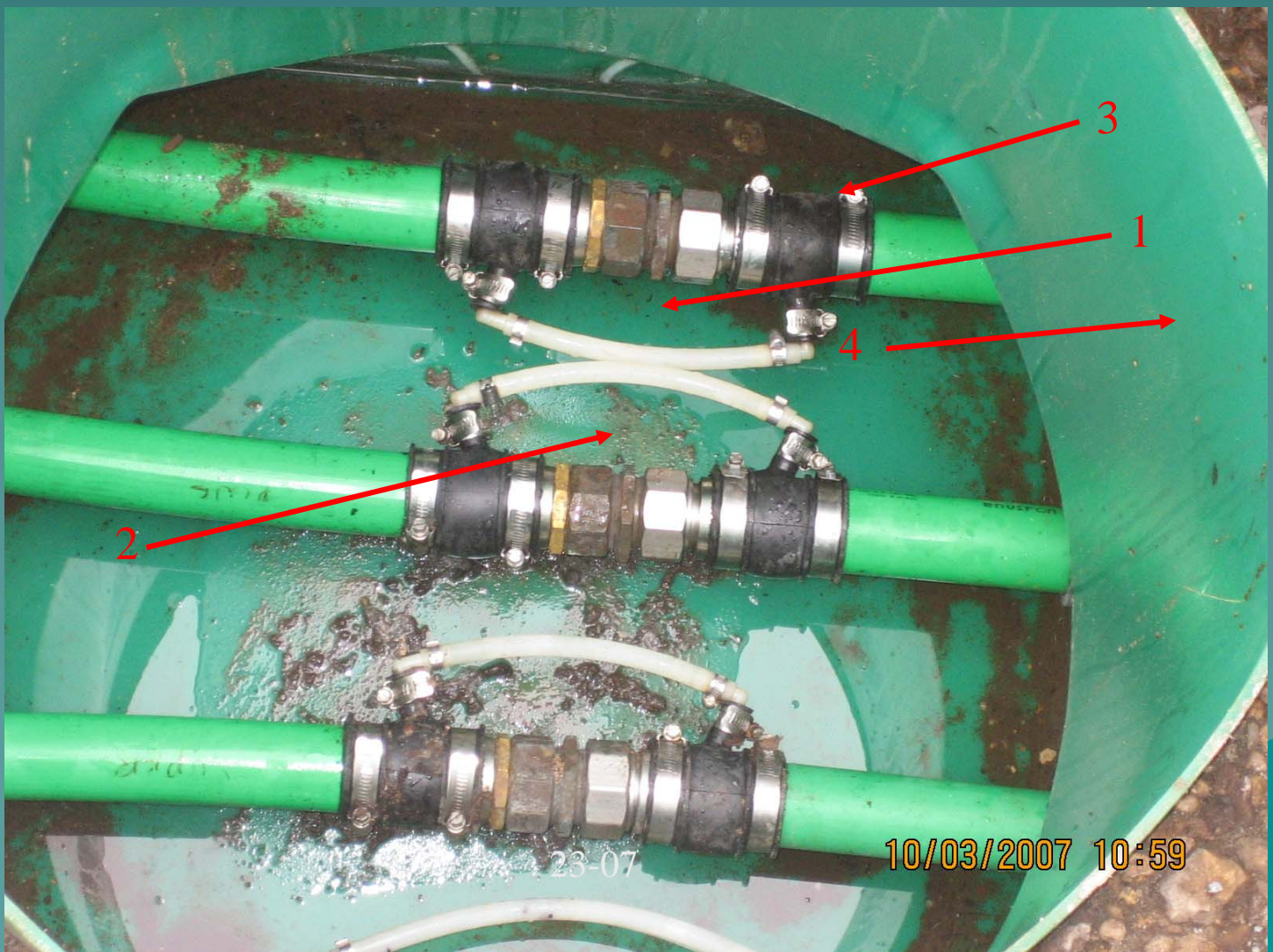
Huh?



It Ain't Kool-Aid!



The jumpers (1) are used to connect the interstitial spaces of double wall flex piping. The connectors (2) are single wall which prevent interstitial monitoring of the entire piping run (product can not transfer from one piping section to the next). The test boots (3) are tight, but fluid can transfer to the interstitial space by means of the jumpers (Remember: the product is under at least 10 - 12 psi). In this picture, interstitial monitoring could be performed without the jumpers if a liquid sensor was located in the transition sump (4), however the test boots must be loose to allow product to enter the containment sump if liquid sensors are used.



This is a picture of double wall flex piping (1) in a dispenser sump (2). The stainless steel riser (3) connects to the dispenser. Since the interstitial does not carry across the single wall metal fittings (4), jumpers (5) are required to allow monitoring of the interstitial space of the entire piping run. If jumpers are not used, then there must be a liquid sensor present in each dispenser sump to be in compliance with **interstitial monitoring**. Remember: if a liquid sensor is present, the test boots must be loose.



Pressure Monitoring

- ◆ Pressure Line Leak Detectors
- ◆ Can perform 3 gph, .2 gph, and .1 gph tests
- ◆ Connected to an ATG panel or dedicated LLD panel
- ◆ Can be used on single or double walled piping
- ◆ Some are wireless



A typical Exxon STP sump that has the following equipment: liquid sensor (1), single wall piping (2), a Veeder-Root pressure transducer (3) and the required SwiftCheck®(functions as a check valve) (4). **Inspection Significance:** Make sure the SwiftCheck® (4) is present (see inset photo for close up view) . If it is not, the pressure transducer (3) is not capable of performing monthly line-leak detection (.2 gph). It can only perform the function of an automatic line-leak detector (3 gph). See next photograph for further information regarding the SwiftCheck®. Also, the functional element (5) must be disabled when using the Veeder-Root pressure transducer. In this photo the installation contractor has left the spring and check valve of the functional element (6) on top of the STP as evidence that the unit was disabled. Since single-wall piping is used, the liquid sensor is only monitoring the STP for leaks. Verify line construction type. See definitions: liquid sensor, ATG, STP sump, Simplicity, Swift Check, LLD and pressure transducer.



An example of a wireless line leak detector (WLLD); this unit is manufactured by Incon. A pressure sensor (1) monitors the STP output line pressure. Note: a mechanical line-leak detector is not required. A wire in a shielded housing (2) connects the pressure sensor to the switch (3) located in the wiring harness housing. A drop in line pressure from a leak prevents current from flowing to the STP motor, thereby stopping additional product loss. This WLLD can display a warning or alarm on the ATG panel by multiplexing through the 220 Volt AC that runs the turbine motor. The unit is capable of detecting a .1, .2 and 3 gph leak. **Inspection Significance:** Look for records that the unit has been tested in accordance with the manufacturer's schedule. See definitions: WLLD,LLD, ATG and STP.



Veeder Root Printout

Q 2:SILVER LINE LEAK

3.0 GAL/HR RESULTS:

LAST TEST:

JAN 16.2008 1:43PM PASS

NUMBER OF TESTS PASSED

PREV 24 HOURS : 37

SINCE MIDNIGHT : 13

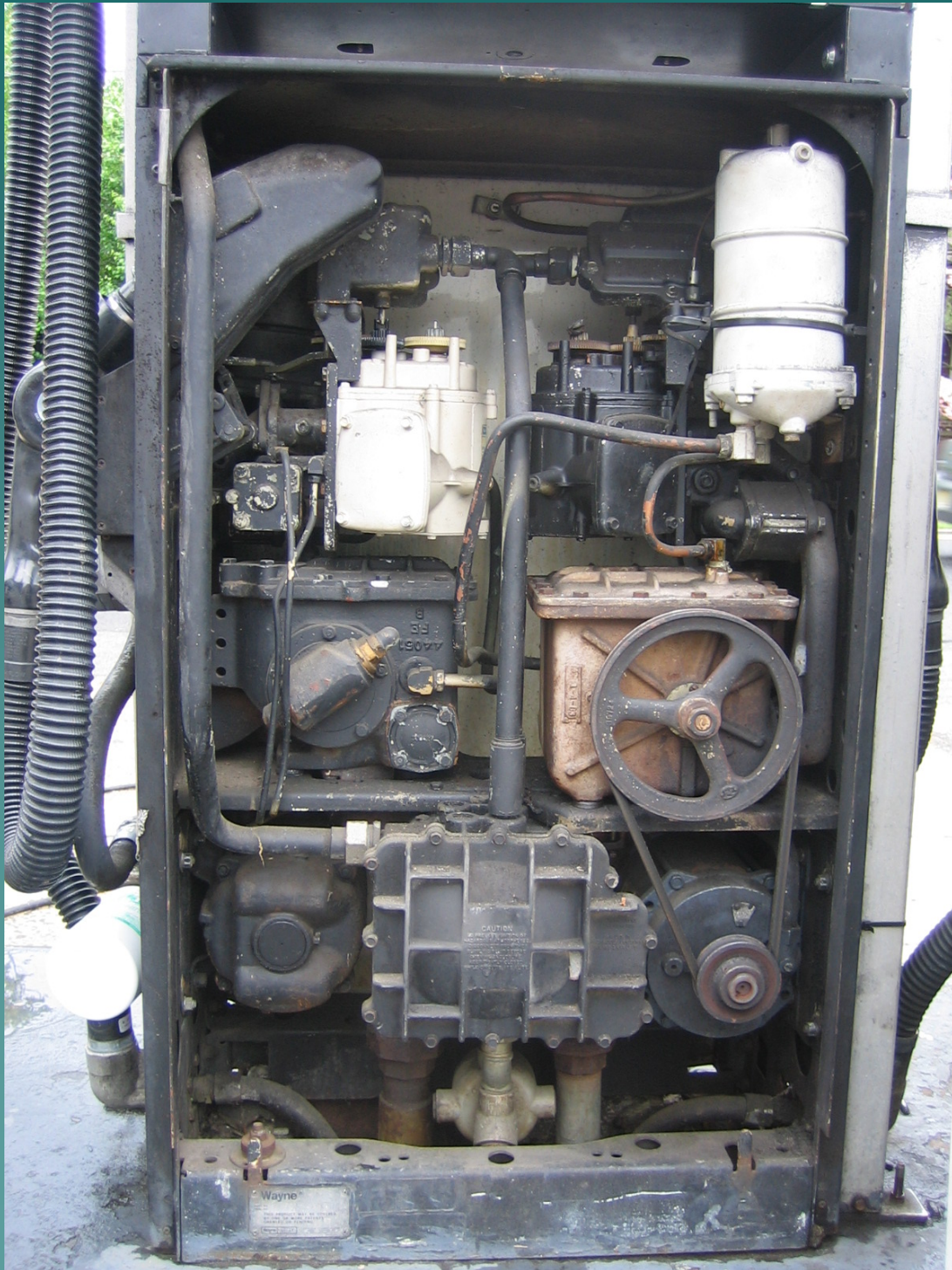
0.20 GAL/HR RESULTS:

JAN 15.2008	8:06AM	PASS
JAN 7.2008	9:47AM	PASS
DEC 30.2007	1:54PM	PASS
DEC 22.2007	8:09AM	PASS
DEC 14.2007	10:25AM	PASS
DEC 6.2007	1:37PM	PASS
NOV 28.2007	9:33AM	PASS
NOV 20.2007	3:50PM	PASS
NOV 12.2007	12:05PM	PASS
NOV 4.2007	10:14AM	PASS

0.10 GAL/HR RESULTS:

AUG 16.2007	8:56AM	PASS
FEB 13.2007	10:58PM	PASS
AUG 13.2006	9:22PM	PASS
FEB 10.2006	4:27PM	PASS
AUG 10.2005	5:47PM	PASS
FEB 7.2005	10:42PM	PASS
JUL 30.2004	7:59AM	PASS
JAN 28.2004	8:29AM	PASS
JUL 22.2003	5:11PM	PASS
JAN 19.2003	10:11PM	PASS

Suction Piping



Suction Piping

- ◆ American Suction (angle check valve, top of tank) – RDM required (precision test every 3 years or monthly monitoring)
- ◆ European Suction (“Safe” suction, union check valve, beneath dispenser) – exempt from RDM

Suction (American vs. European)

- ◆ Union Check (Safe-European)
- ◆ Angle Check (American)
- ◆ Safe suction exempt from monitoring (why?)
- ◆ Any failure in the line will cause the product to drain back into the tank, preventing the line from holding suction to dispense.
- ◆ American suction will NOT drain back into the tank with a line failure due to the check valve on top of the tank.
- ◆ Monitoring requirements: Safe is exempt, American requires either monthly monitoring OR a **3-year** test.

353 9/10
ALL TAXES INCLUDED

Getty

\$ 57.00	Sale	Sale	\$ 40.00
16.106	Gallons	Gallons	10.647
\$ 3.539	Price Per Gallon Including Tax	Price Per Gallon Including Tax	\$ 3.759

87 Unleaded Regular 87 DETERGENT GASOLINES Premium Unleaded 92

Getty

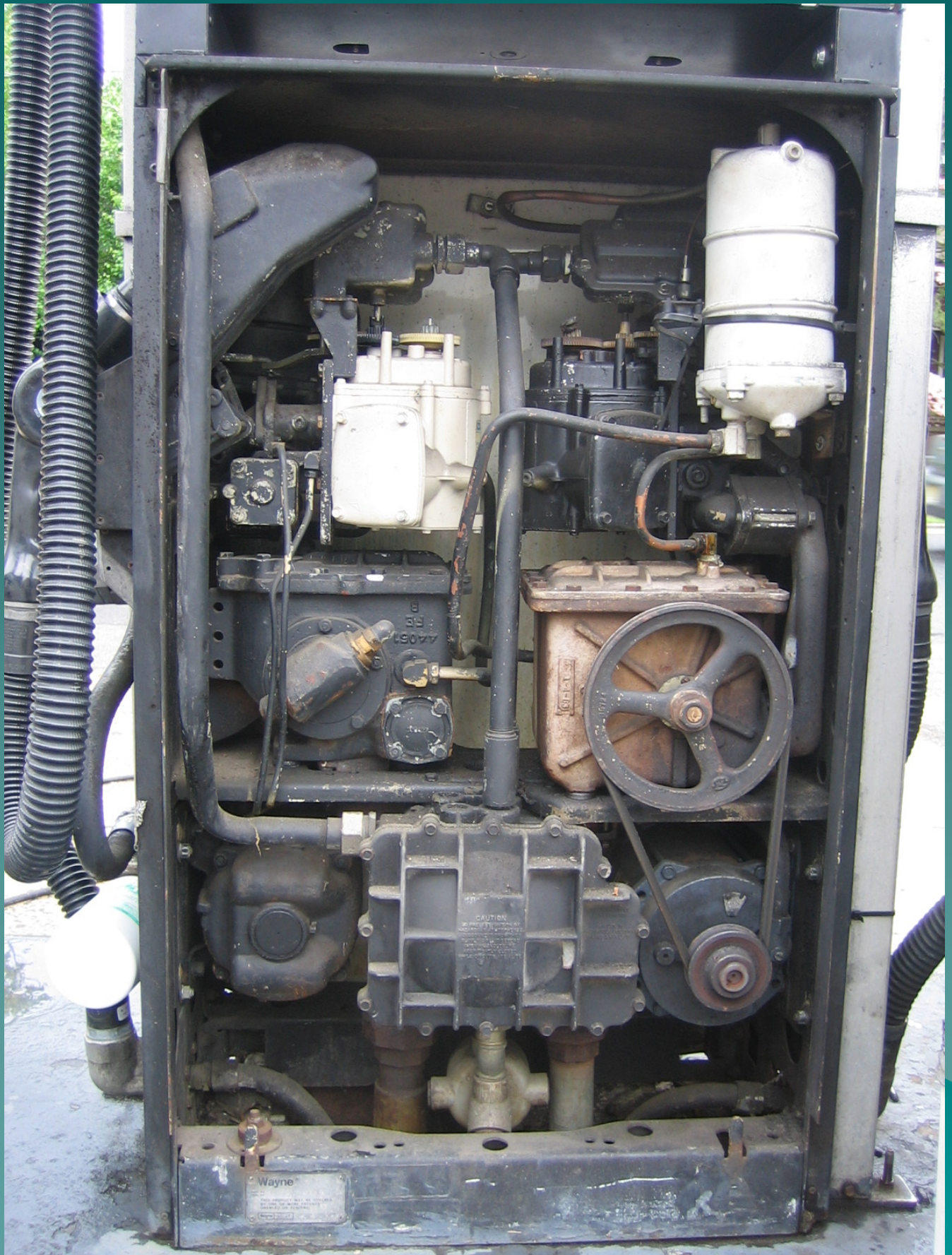
CREDIT CARDS
Discover, Visa, Mastercard, American Express, Diners Club

FLEET CARDS
LUBACOR, TRAVELER, FLEET

DEBIT CARDS
NYCE, pulse, STAR, Sunoco, Mobil



5078



3/ RELEASE DETECTION & MONITORING (RDM)

TANKS:

ATG

SIR

Interstitial

Tank Tests (limited application)

Manual Tank Gauging (2,000 gallons or less)

Inventory Control w/ Monthly Reconciliation

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SIR

Interstitial

Pressure or Wireless Monitoring Devices (.1, .2 & 3 gph)

Mechanical Line Leak Detector (3 gph)

Line Tightness Test

PROOF OF RDM MUST BE AVAILABLE

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Degradable anodes fitted to tank ends or anodes wired to the tank shell. Spike anodes wired to piping

Impressed System:

Rectifier wired to anode array to protect tanks and/or piping

PROOF OF 3 YEAR TEST & 60 DAY PANEL TEST (RECTIFIER)

An **sti-P₃** tank (sti = Steel Tank Institute). All sti-P₃ tanks of 10,000 gallons or less are shipped with anodes (1) attached to each end. The anodes, in part, protect the tank from corrosion. In addition, the 2-inch riser (2) indicates that this UST is double-wall and the riser is connected to the interstitial space. The riser provides an access point for monitoring of the interstitial space by either electronic sensors or by manual checks. Not as apparent are the two additional methods of corrosion protection which are the outer coating and the dielectric bushings (3) where the system piping will be connected to the UST. When the UST is installed, a cathodic protection test port (PP4) with a test wire should be installed at ground surface to be able to conduct a corrosion test of the UST every 3 years. See definitions: *dielectric, sti-P₃, interstitial, PP4 test port.*



3/ RELEASE DETECTION & MONITORING (RDM)

TANKS:

ATG

SIR

Interstitial

Tank Tests (limited application)

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Mechanical Line Leak Detector (3 gph)

Line Tightness Test

PROOF OF RDM MUST BE AVAILABLE

4/ CORROSION PROTECTION

METALLIC TANKS & PIPING

Passive System:

Degradable anodes fitted to tank ends or anodes wired to the tank shell. Spike anodes wired to piping

Impressed System:

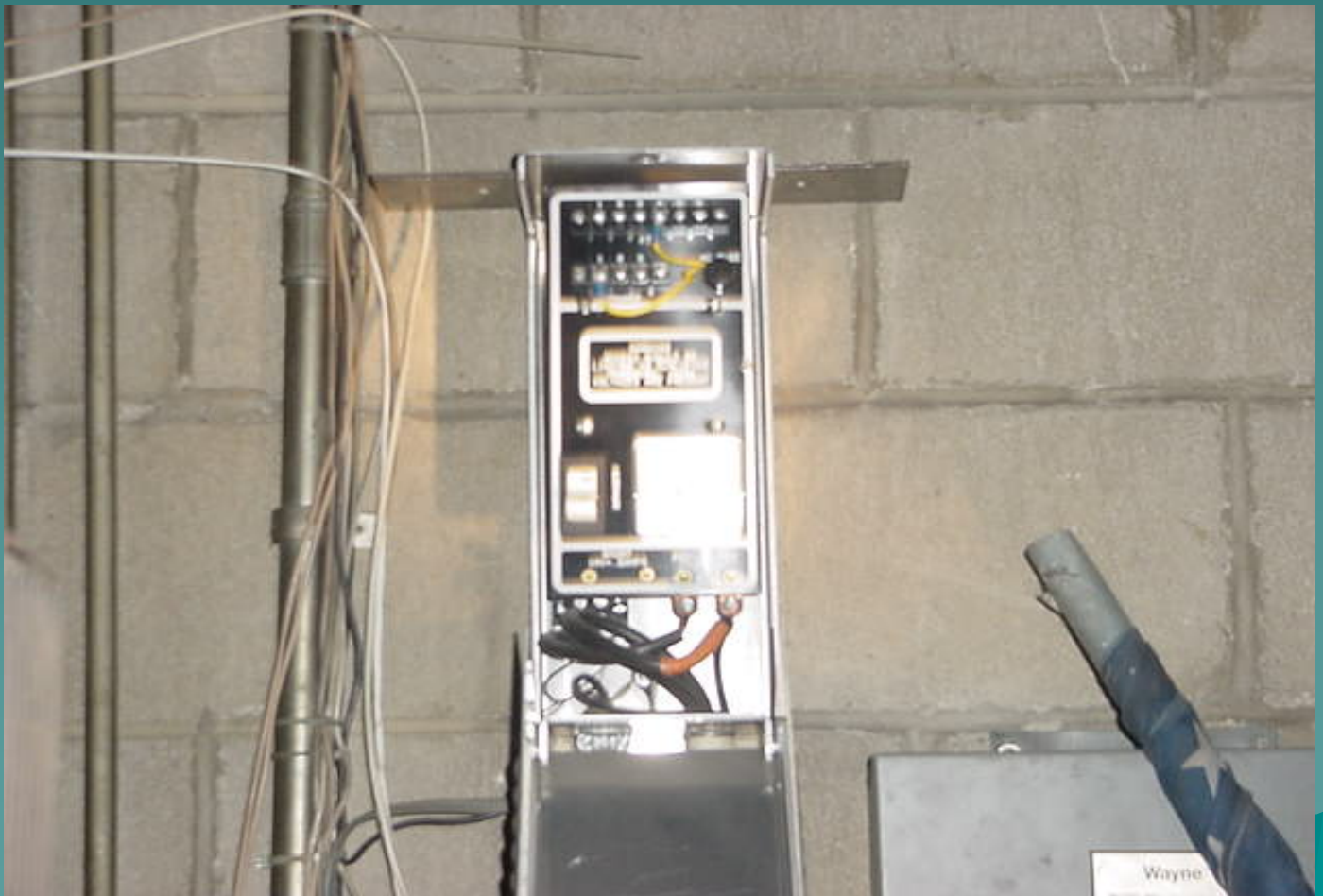
Rectifier wired to anode array to protect tanks and/or piping

PROOF OF 3 YEAR TEST & 60 DAY PANEL TEST (RECTIFIER)

A rectifier for an impressed cathodic system. The rectifier converts alternating current (AC) to direct current (DC) which, through buried wires and cathodes, is introduced to the soil around the tank field and/or product lines. This current protects the steel tanks and lines from corrosion. Please refer to the section concerning cathodic testing. **Inspection Significance:** Open the cover and determine if the system is running. Ask the owner or operator to verify that the rectifier is operating and to present documentation that its operation has been checked every 60 days. See definitions: impressed system, corrosion and rectifier.



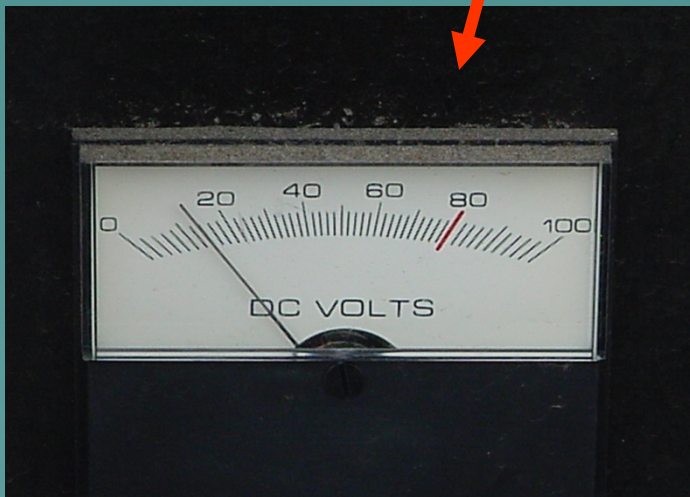
The cover on this rectifier has been opened for inspection. Be careful when opening a panel because 120 volt lines are present. The unit should be opened to confirm that it is turned on. This can be verified by an illuminated pilot light or readings above zero on the gauges (if present). **Inspection Significance:** The panel must be inspected and verified that it is operating by the owner or operator every 60 days. In addition, the system (cathodes and wiring) are required to be tested every three years (a cathodic test). The owner or operator should have records of the 60-day check as well as the results of the 3-year cathodic test. Please refer to the section concerning cathodic testing. See definitions: impressed system, corrosion and rectifier.



Another manufacturer's rectifier. This unit has both an ammeter and a voltmeter. The gauge readings (other than zero) are not important for the inspection but do indicate that the rectifier is operating. **Inspection Significance:** You must require that the owner or operator verify the 60-day panel inspection status and the required three-year cathodic test results. If you know how to do a cathodic test, you should turn the rectifier off when performing the 100-millivolt shift test. If you turn it off to run a test, make sure you remember to turn it back on before you leave. Refer to the cathodic test section for more information. See definitions: impressed system, corrosion and rectifier.



This rectifier contains both an ammeter and voltmeter. To verify that the rectifier panel is on, these gauges should have values above zero. The readings do not tell you that the system is protecting the tanks and lines, it only indicates that the unit is operating. See *definitions: impressed system, corrosion and rectifier*.



5/ SPILL PREVENTION

Containment Devices/Spill Buckets (minimum of 3 gallons capacity) must be fitted to the tank delivery (fill ports) points.

Inspect for integrity every 30 days

Remove product, water and debris PRIOR to a fuel delivery

MAINTAIN CONTAINMENT DEVICE INSPECTION LOG

6/ TANK OVERFILL PROTECTION

TANK OVERFILL DEVICES

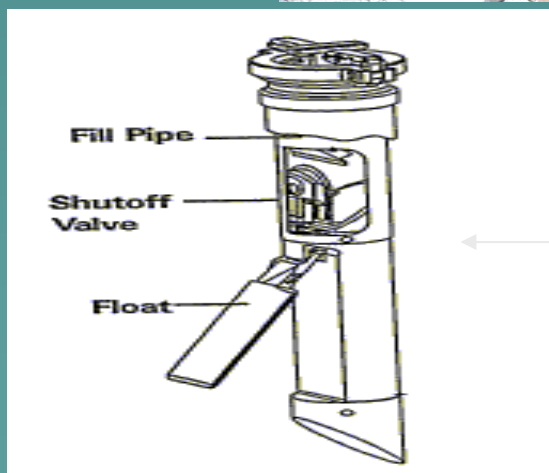
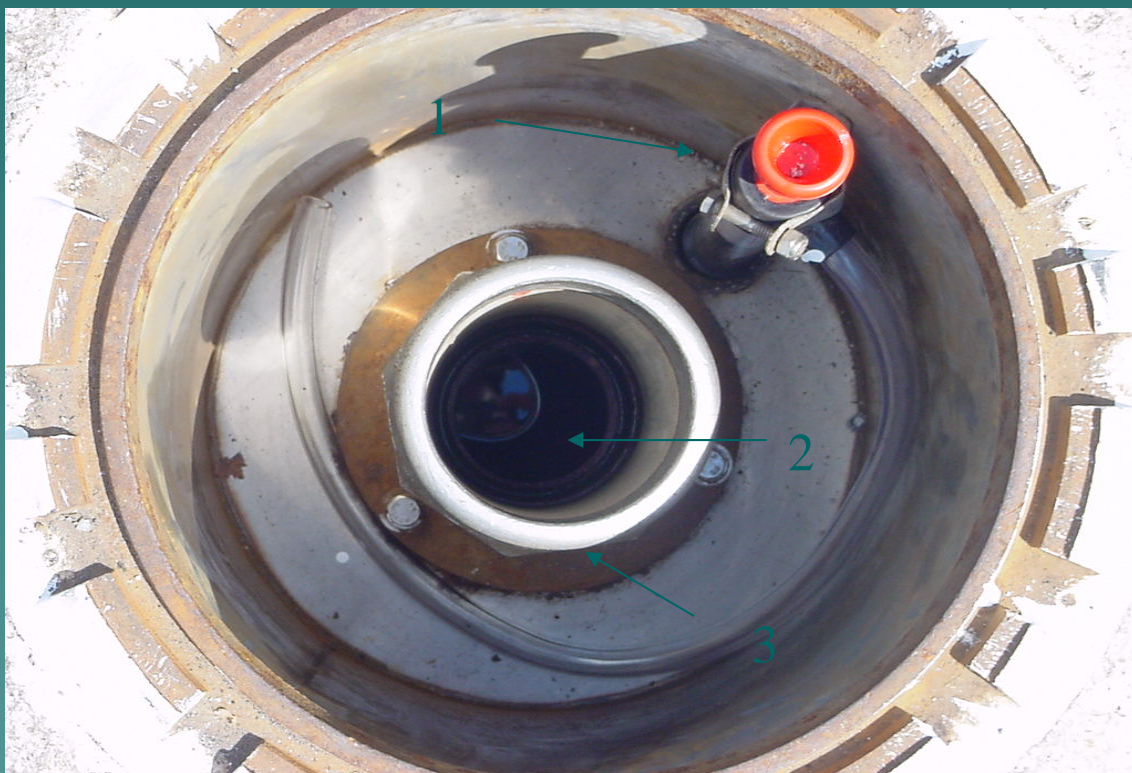
High Level Alarm that alerts the delivery person that the tank is at 90% capacity. Requires a tank probe. **HORN & LIGHT MUST BE LOCATED AT TANK FIELD**

Flapper Valve (OPW™/EBW™) installed in drop tube. Closes drop tube when tank is at 95% capacity. Not compatible with pressure deliveries.

Ball Floats can not be used with pressure deliveries, remote fills, suction systems (air eliminator valves) or coaxial Stage 1 drop tubes.

DOCUMENT OVERFILL PROTECTION

A product tight spill bucket. A manual pump (1) is used to pump water or product out of the spill bucket. An in-tank float (2) is present in the drop tube (3). The float (2) closes the drop tube when the tank is filled to 95% of its capacity. Item (4) is a diagram and photograph of the in-tank float valve contained within the drop tube. **Inspection Significance:** This UST is equipped with the required spill prevention (spill bucket) and has a method of overfill prevention (float valve). See definitions: spill bucket, overfill protection.



Another type of spill bucket and inner-cover is shown here. The outer, color-coded cover has been removed for the photograph. The cover has a locking bar (1) which ensures that the cover is held securely tight to prevent debris and rain water from entering the spill bucket. A rubber gasket on the inside of the cover (2) helps keep rain water out of the spill bucket (3). Also seen is the cap (4) on the fill port. **Inspection Significance:** If debris, water or product is present in the spill bucket require the owner or operator to remove these in your presence. All liquid must be properly containerized and disposed. Look for obvious signs of a lack of integrity such as cracks or a separation of the spill bucket from the fill droptube. See definitions: spill bucket, drop tube.

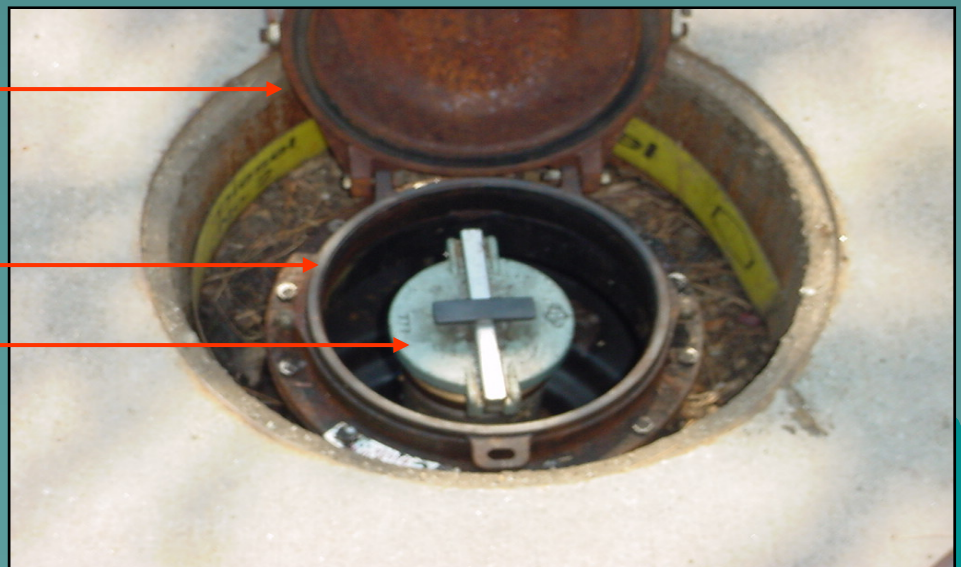


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These large spill buckets are usually found at Amoco sites. The steel grating is to prevent debris from entering the spill bucket. **Inspection Significance:** If debris, water or product is present in the spill bucket require the owner or operator to remove these in your presence. Look for obvious signs of a lack of integrity such as cracks or a separation of the spill bucket from the fill droptube. See *definition: spill bucket*.



5/ SPILL PREVENTION

Containment Devices/Spill Buckets (minimum of 3 gallons capacity) must be fitted to the tank delivery (fill ports) points.

Inspect for integrity every 30 days

Remove product, water and debris PRIOR to a fuel delivery

MAINTAIN CONTAINMENT DEVICE
INSPECTION LOG

6/ TANK OVERFILL PROTECTION

TANK OVERFILL DEVICES

High Level Alarm that alerts the delivery person that the tank is at 90% capacity. Requires a tank probe. **HORN & LIGHT MUST BE LOCATED AT TANK FIELD**

Flapper Valve (OPW™/EBW™) installed in drop tube. Closes drop tube when tank is at 95% capacity. Not compatible with pressure deliveries.

Ball Floats can not be used with pressure deliveries, remote fills, suction systems (air eliminator valves) or coaxial Stage 1 drop tubes.

DOCUMENT OVERFILL
PROTECTION

This unit, which should be located outside the building and near the tank field, contains a red light (1) and a horn (2). The unit is connected to the ATG panel and should give a visual and audible warning when the UST is filled to 95% of its capacity. The bell (3) in the inset photograph is another form of an alarm that can be used for overfill compliance. **Inspection significance:** An alarm must be located in view or hearing of the delivery driver to serve as a warning to prevent overfill of the UST. If this is the method that the owner or operator is using for overfill protection, it must be located within view of the driver. If it is not within sight or hearing of the tank field, the owner or operator should be cited for a lack of overfill protection. See definitions: ATG and overfill prevention



This is a coaxial drop tube that also includes a method of overfill protection as well as being one of two methods of Stage I vapor recovery. The inner pipe (1) conducts fuel from the tanker to the UST. The vapors return to the truck through the space between the inner and outer pipe (2). The warning labels (3) indicate that the coaxial is made by OPW and also contains an in-tank float valve that prevents overfilling the tank. Item (4) is a photograph of the in tank float valve contained within the drop tube.

Inspection Significance: Verify the presence of the float valve by looking down the drop tube with an intrinsically safe flashlight. The presence of the coaxial drop tube and the warning label do not guarantee that an in-tank float (overfill protection) is present. If no float is present, verify what method of overfill is used for the UST. See definitions: Stage I, co-axial and overfill protection.

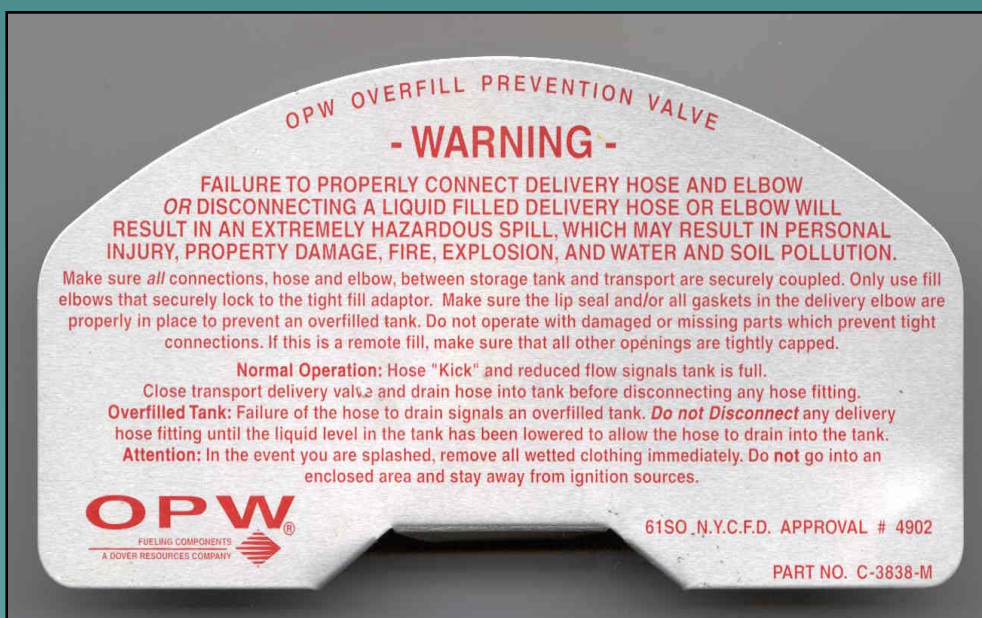


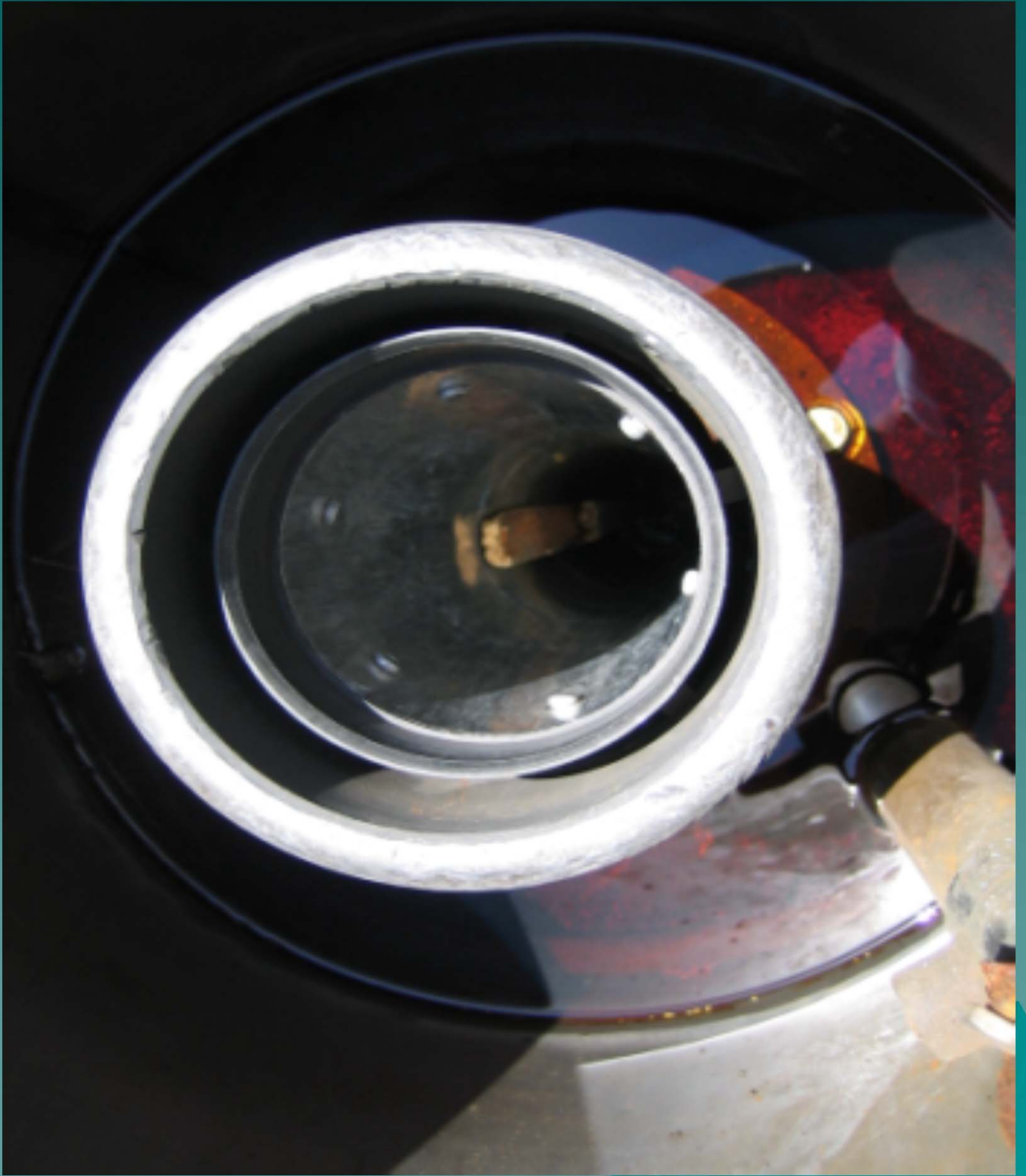
4



3

3





Overfill ball float commonly referred to as a 90% flow restrictor. This device is located in the UST and is connected to the vent line which is located just above the top of the UST. As product is introduced into the UST and it reaches the ball (1) at the bottom of the device, the ball floats on top of the product. When the ball reaches the end of the sub (2), it restricts the air flow out of the UST through the vent line. At this point, the UST is 90% full. This restriction causes a significant slowdown of product delivery into the UST signaling to the delivery person to shut off the valves on the delivery truck to avoid an overfill. Because the UST is only 90% full, this allows the product remaining in the delivery hose to drain into the UST without overflowing the tank. The cap (3) is typically what is seen under a small cover at the tank field for this type of overfill protection. **Inspection Significance: This type of overfill protection should not be used for suction systems, systems with remote fills or systems that receive deliveries under pressure. Since the ball and sub are located within the tank, the cap (3) must be located along the center line of the tank to indicate the presence of a 90% flow restrictor. See definitions: Overfill prevention.**



TANK CONSTRUCTION



UNDERGROUND STORAGE TANK EQUIPMENT N.J.A.C. 7:14B REQUIREMENTS

UNDERGROUND TANKS

Single Wall

Double Wall

CONSTRUCTION

Fiberglass Reinforced Plastic (FRP)

Coated Steel (epoxy/FRP/urethane: UL 1746 criteria)

Steel w/Passive System
(cathodic test every 3 years)

Steel w/Impressed System
(cathodic test every 3 years)

Steel w/Lining
Lining must be inspected **FIRST TEN
YEARS & EVERY FIVE YEARS
THEREAFTER**

If Passive or Impressed is present **AND**
tested every THREE YEARS, lining does
not require inspection

UNDERGROUND STORAGE TANK EQUIPMENT N.J.A.C. 7:14B REQUIREMENTS

UNDERGROUND PIPING

Single Wall

Double Wall

Pressure vs Suction

American/Angle Check Valve

◆ European/Safe/Union Check Valve

CONSTRUCTION

Fiberglass Reinforced Plastic (FRP)

(if ◆: RDM NOT Required)

Coated Steel (verify actual construction)

Steel w/Passive System

(if ◆: RDM NOT Required)

(cathodic test every 3 years)

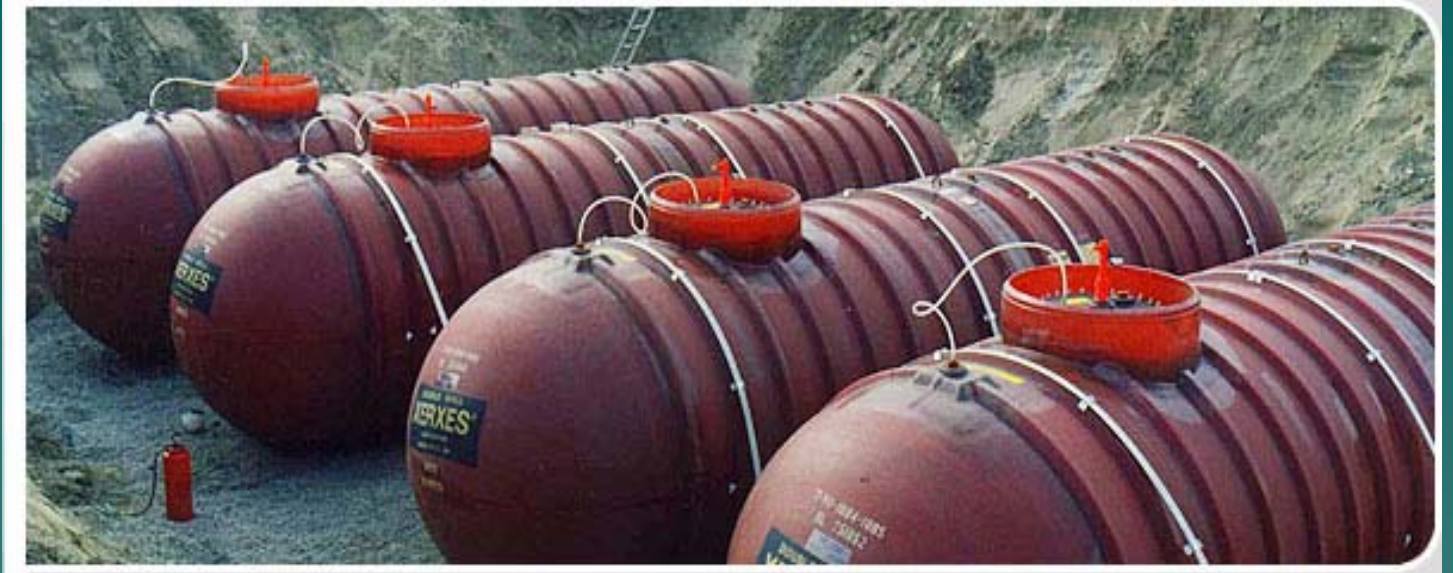
Steel w/Impressed System

(if ◆: RDM NOT Required)

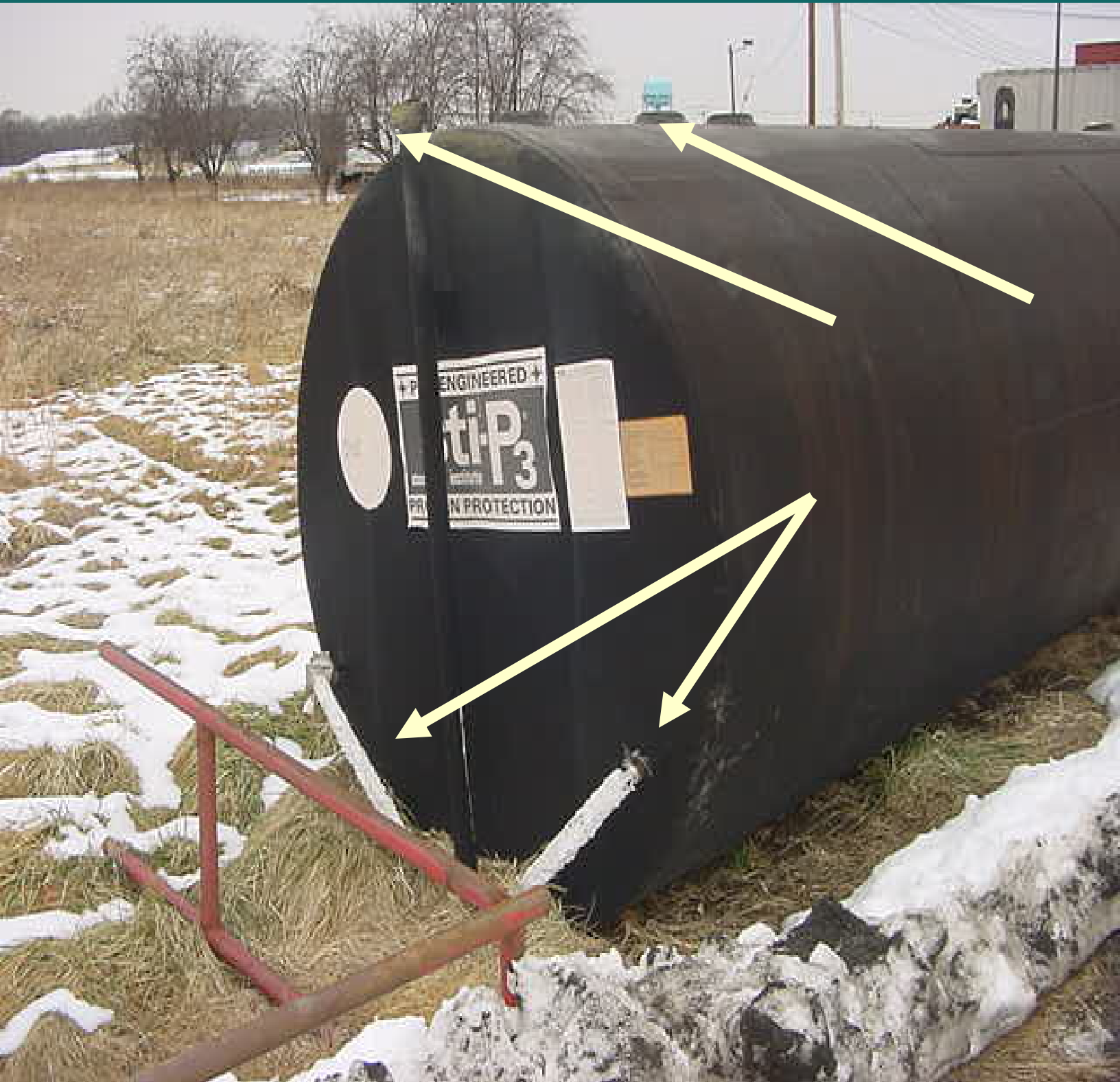
(cathodic test every 3 years)

Flex Piping

(if ◆: RDM NOT Required)



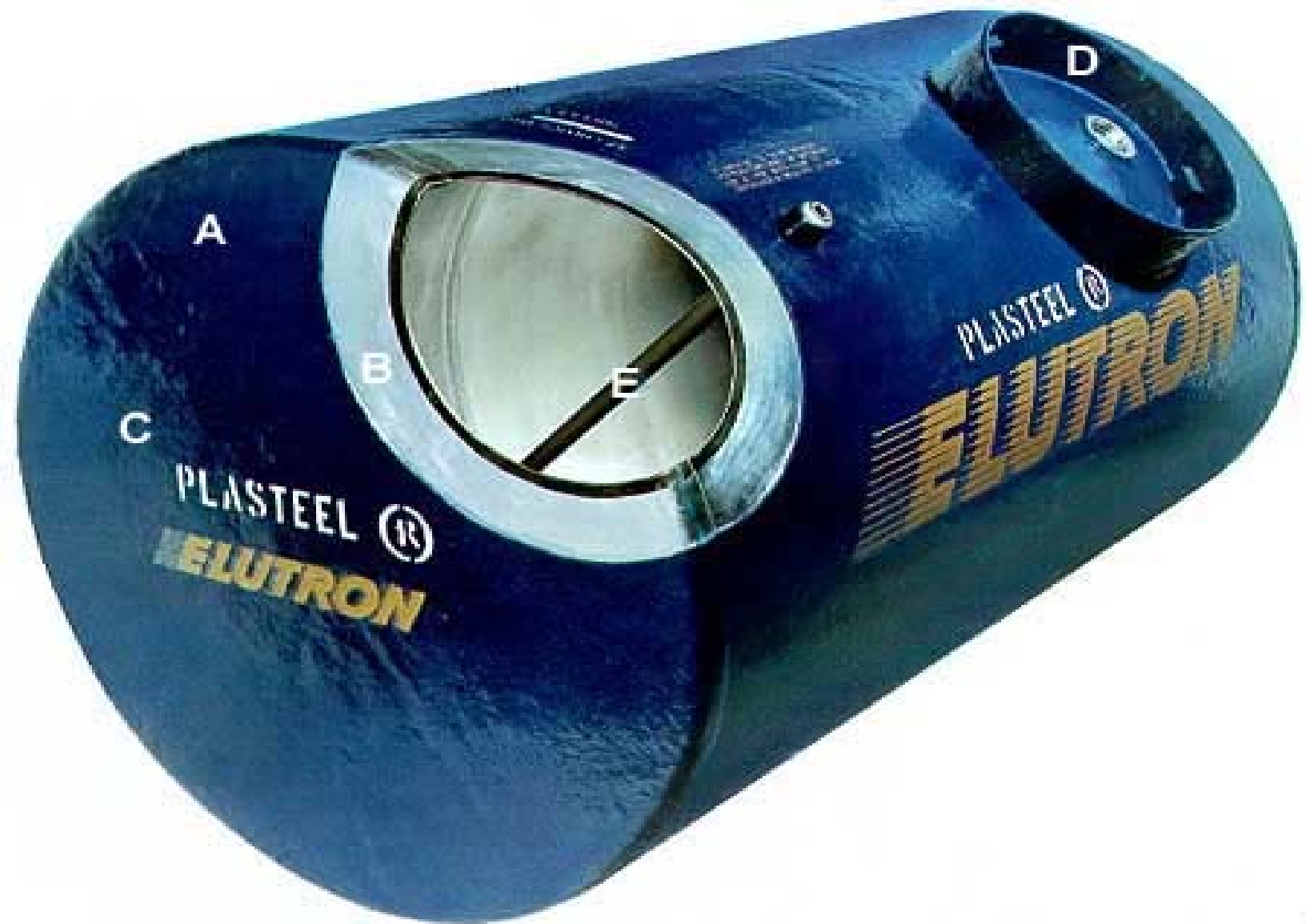






UL 1746?





UL 1746?

PIPING CONSTRUCTION















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03/05/2008



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I'll be back