NJDEP Water Compliance & Enforcement

Underground Storage Tank Inspection Program

THE BIG 6
12/98 CRITERIA

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

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.

Approval Date:
01/24/2008

Expiration Date:
12/31/2010

Facility ID:
012345

Registration Activity ID:
UST070001

Facility Contact (Operator):
Joseph Smith
(201) 555-1234

Total Number of Tanks:
3

Total Capacity (Gallons):
26000

Facility Address:

JOE'S GARAGE
444 MAIN ST
ANYWHERE, NJ 02854

Owner:

JOSEPH SMITH
444 MAIN ST
ANYWHERE NJ, 02854

Approved Tanks and Products Stored:

TANK No.	TANK CAPACITY	TANK CONTENTS
5175	8000	Unleaded Gasoline
5176	8000	Light Diesel Fuel (No. 1-D)
5177	10000	Unleaded Gasoline

This Registration Must Be Available for Inspection at the Facility AT ALL TIMES

1-609-633-1464 • www.state.nj.us/dep/srp/bust

Check In ☐ Yes ☐ No

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

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

SECTION A - GENERAL FACILITY INFORMATION

1. **Facility Name**
2. **Facility Location**
   Address Line 1
   Address Line 2
   City or Municipality
   COUNTY | STATE (NJ) | 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

1/ REGISTRATION

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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)

A typical automatic tank gauging (ATG) control panel. Veeder-Root ATGs are the most common systems you will see during inspections. Some common models include the TLS-200, 200i, 250, 300, 350, 350 CSLD and Simplicity. These units monitor minute changes of the product levels in the tanks and can be programmed to do daily, weekly and monthly tank tests. If the station is using an ATG unit for leak detection, make sure that the unit is third-party certified to test the tanks at a maximum leak rate of .2 gph. (A copy of the 3rd party leak detection evaluations can be obtained on line at www.nwglde.org). The ATG can also monitor the lines through various sensors and related equipment.The interstitial space (lines and tanks) can also be monitored. If the unit is operating properly the liquid crystal display (LCD) (1) should have a message that reads "ALL FUNCTIONS NORMAL". Check to see if the power light (2) is on. Warning and alarm lights are also located on the panel at (2). If either of these lights are illuminated, a corresponding message will be present on the LCD. The printer (3) (not always present) may be used to print out test results and inventory checks. **Inspection Significance: You should verify that the equipment used to conduct leak detection is present and operating, i.e., sensors and probes. Just because there is an ATG unit present, don't assume that leak detection is being conducted properly. The system can also be used for overfill protection. You will need to confirm this. If you are not certain about the operation of the unit, have the owner or operator document what the unit is monitoring and if the monitoring is done per the regulations. The owner or operator must be able to verify that the unit is performing a tank test at least every 30 days.** *See definitions: ATG, liquid sensor, tank probe, pressure transducer, CPT, overfill prevention and interstitial (ATG = another tank gone).*

Veeder-Root also manufactures the Simplicity® system which is usually found at Exxon/Mobil sites. These units usually do not have a printer and are monitored by a third party at a remote location. **Inspection Significance: In many cases, the owner or operator will not have leak detection records present. You may require that the owner or operator contact the monitoring company (using the site ID number) and have these records forwarded to you. Typically, at Exxon/Mobil sites, the Simplicity® unit also monitors the lines using a pressure transducer (PLLD).** *See definitions: ATG, liquid sensor, tank probe, pressure transducer, PLLD, CPT, overfill, Swiftcheck, Simplicity and interstitial.*

The Auto-Stik is another type of ATG unit which is manufactured by EBW, manufacturers of sumps, overfill equipment and spill buckets. This unit has a printer (1) as well as a liquid crystal display message panel (2). **Inspection Significance: Don't assume that the unit is doing leak detection. The owner or operator is required to furnish documentation that tank tests are being performed monthly and that the unit is operating per the manufacturer's requirements.** *See definitions: ATG.*

The INCON is another type of ATG unit. This unit has a printer (1) as well as a liquid crystal display message panel (2). **Inspection Significance: Don't assume that the unit is doing leak detection. The owner or operator is required to furnish documentation that tank tests are being performed monthly and that the unit is operating per the manufacturer's requirements.** *See definitions: ATG.*

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PIPING:

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- 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

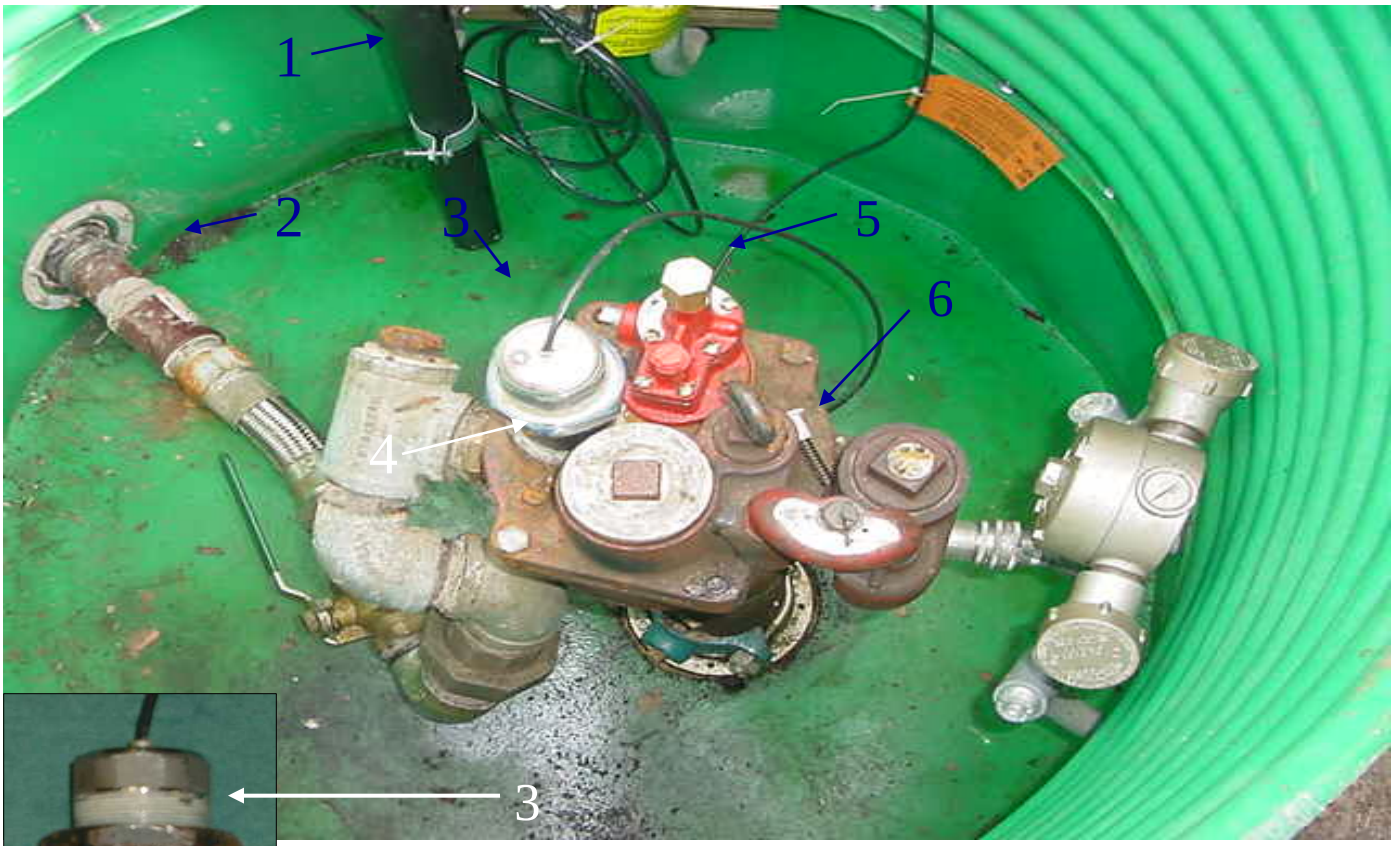
Impressed System:

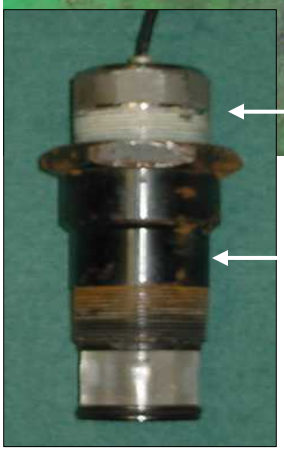
Rectifier wired to anode array to protect tanks and/or piping

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

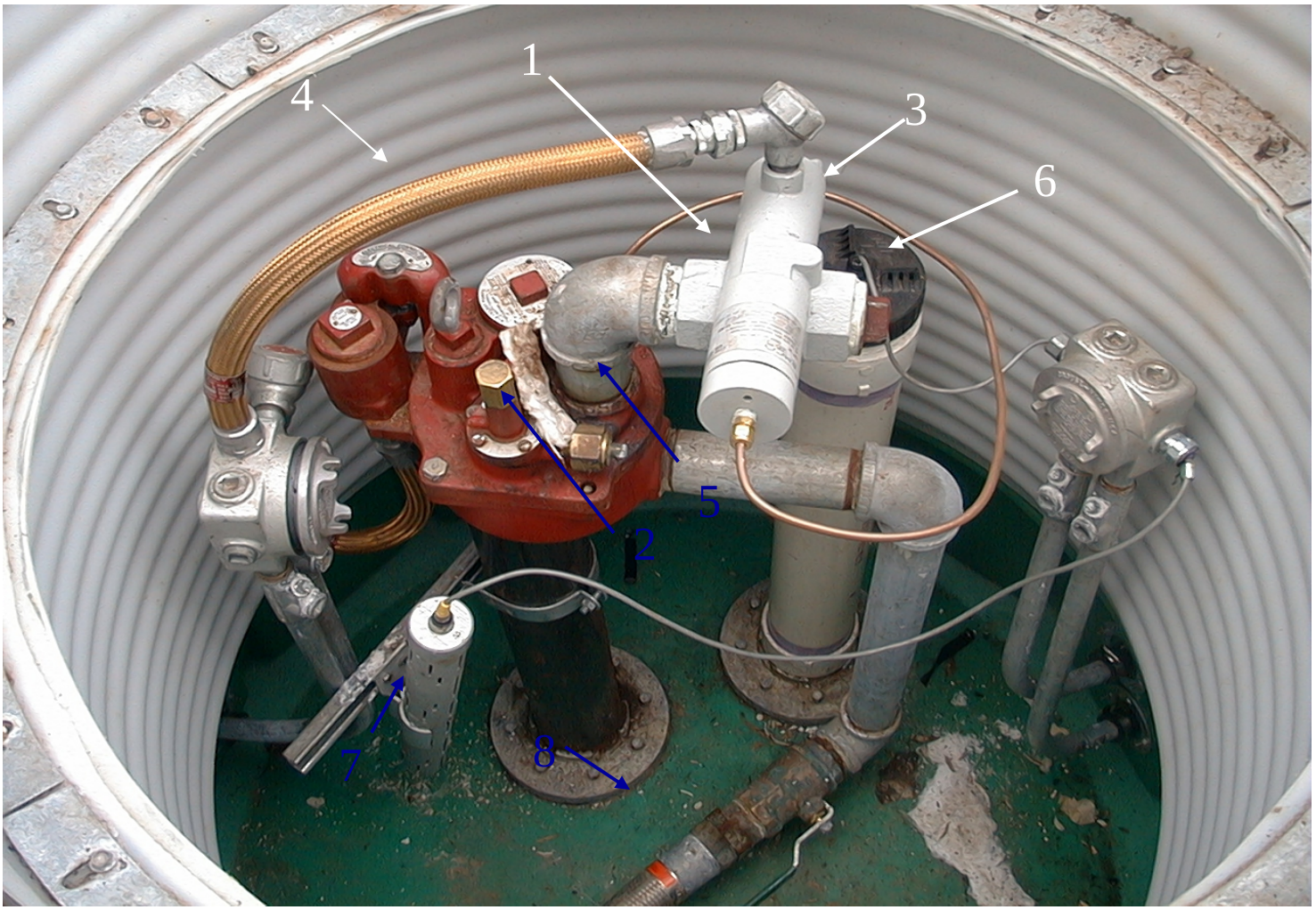
Another view of a “Red Jacket®” Quantum STP. The double-wall fiberglass line (1) is monitored by a liquid sensor (2) and a pressure transducer (3). The pressure transducer is capable of detecting line leaks of .1, .2 and 3 gph which eliminates the need for a mechanical LLD. Note the manway (4) which 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.*

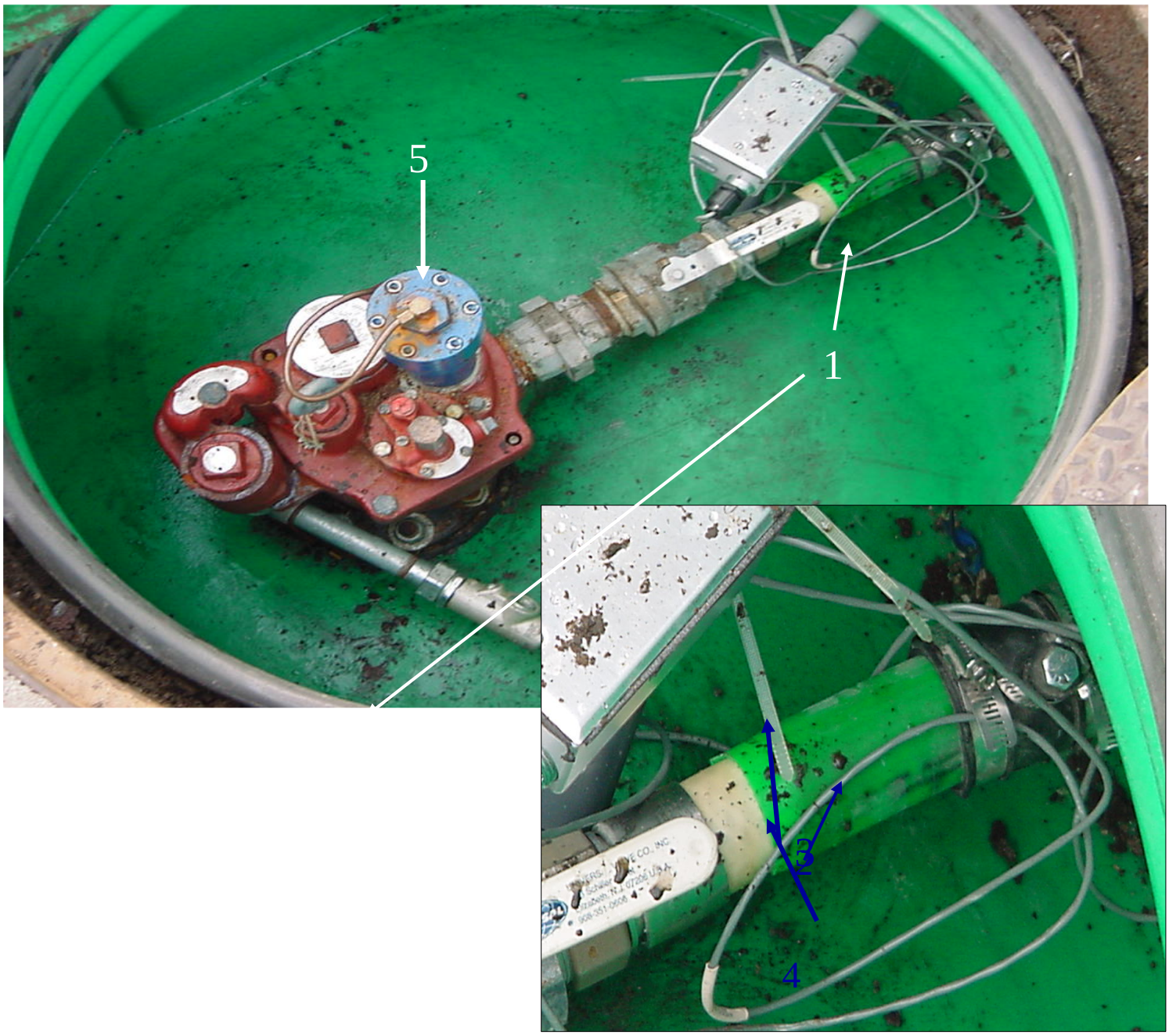




An Emco® Electronics Line Leak Detector Model Q0011-002 (1) which is capable of detecting a line leak of 0.1, 0.2 and 3 gph. Therefore, a separate automatic line leak detector is not required. Also of note are the ATG probe (6) and the liquid sump sensor (7). **Inspection Significance: When installed on a "Red Jacket" STP (this example), the STP must be equipped with a functional element (2). Note: the copper vent line (3) from the Emco® sensor to the tank test-port on the STP. This vent must be present for the unit to function on any type of STP. The unit can be installed with the electrical conduit (4) installed up or downward as a space-saving measure. This will not affect the functionality of the unit. Note: Model Q0011-002 (shown) must be installed in the STP LLD Port (5). Model Q0011-001, which looks like the Q0011-002 in appearance, must be installed in the pressurized product line (8). Determine which model is present during your inspection!**



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 bee 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.**



This sump contains a “Red Jacket®” STP (3), and is fitted with an VMI LD-2000 LLD (2). Although not as common as a “Red Jacket” or FE Petro LLD, these are seen at some sites. The sump has double-wall piping, and reducer boots (1) are present. The clamps on the boots are tight which would prevent leak detection of the lines using a liquid sensor in the STP sump. In this case, the fact that the boots are tight does not matter, because a liquid sensor is not present. **Inspection Significance: In this instance, the inspector must determine what the owner or operator is doing for line-leak detection. The LLD is only capable of detecting leaks of 3 gph (i.e., catastrophic releases). In addition to the LLD, line leak detection includes either monthly line leak detection (i.e., .2 gph or 150 gallons in 30 days) or an annual line tightness test. Also verify construction of the piping here and at the dispenser to determine if corrosion protection is a requirement..** *See definitions: liquid sensor, boot and interstitial*

In this sump is part of a manifolded tank system. The sump pictured here does not have an STP, but is connected to a tank that does have an STP by means of the manifold line (1). **Inspection Significance: Even though there is a minimal chance of a leak from the piping, the owner or operator has chosen to fit a liquid sensor (2) for leak detection. A tank bung (3) can be used for an optional riser.** *See definitions: STP, liquid sensor and manifolded.*

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:

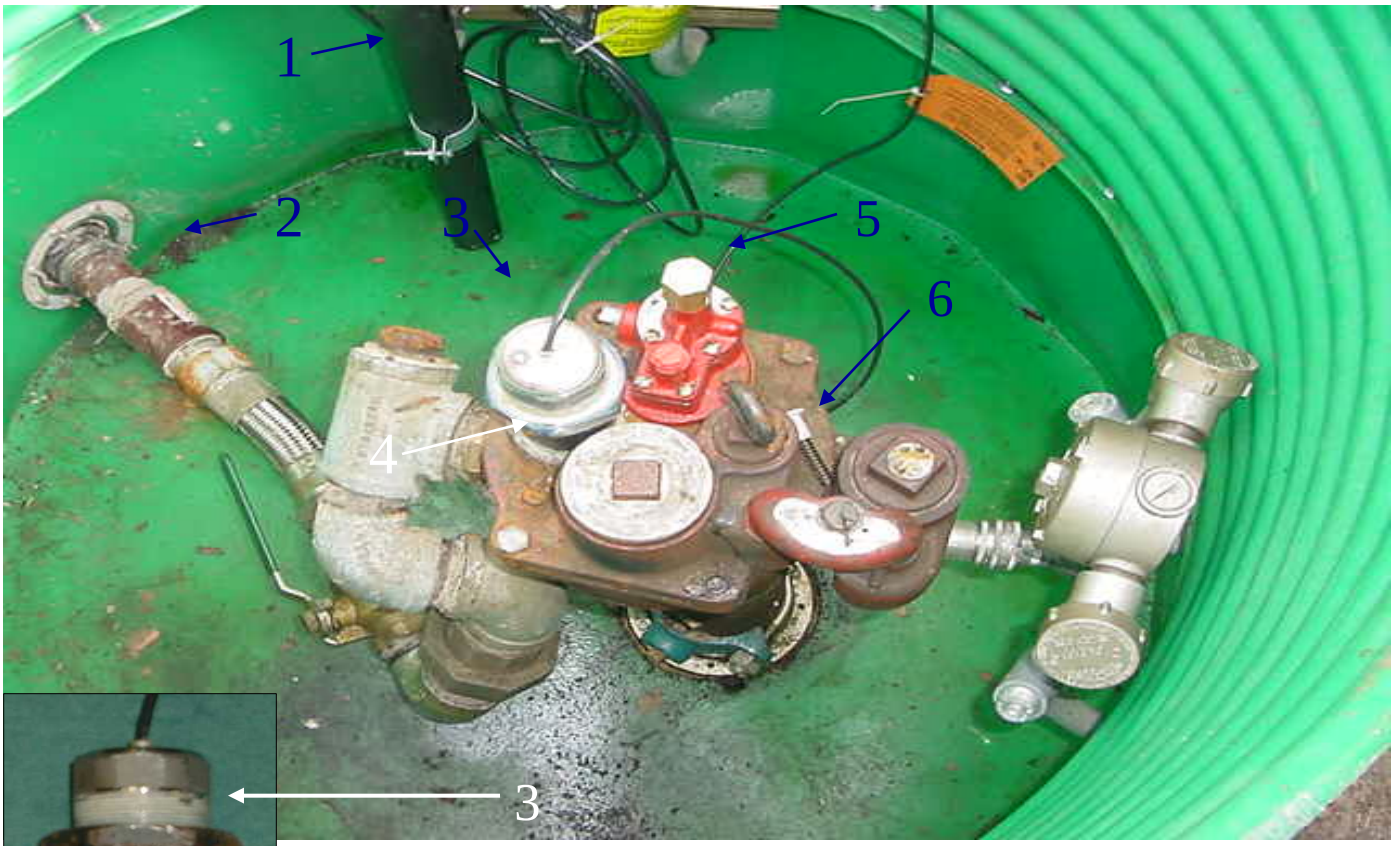
Degradable anodes fitted to tank ends or anodes wired to the tank shell. Spike anodes wired to piping

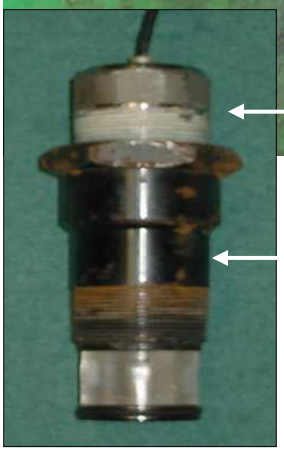
Impressed System:

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

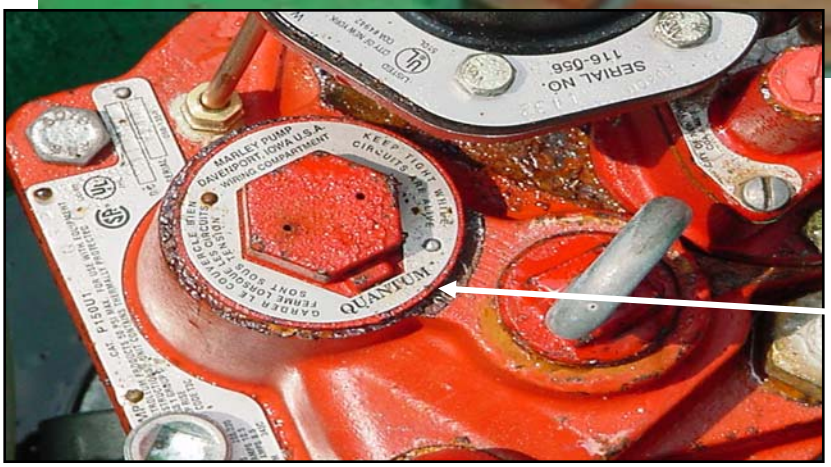
 PROOF OF 3 YEAR TEST & 60 DAY PANEL TEST (RECTIFIER)

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.*

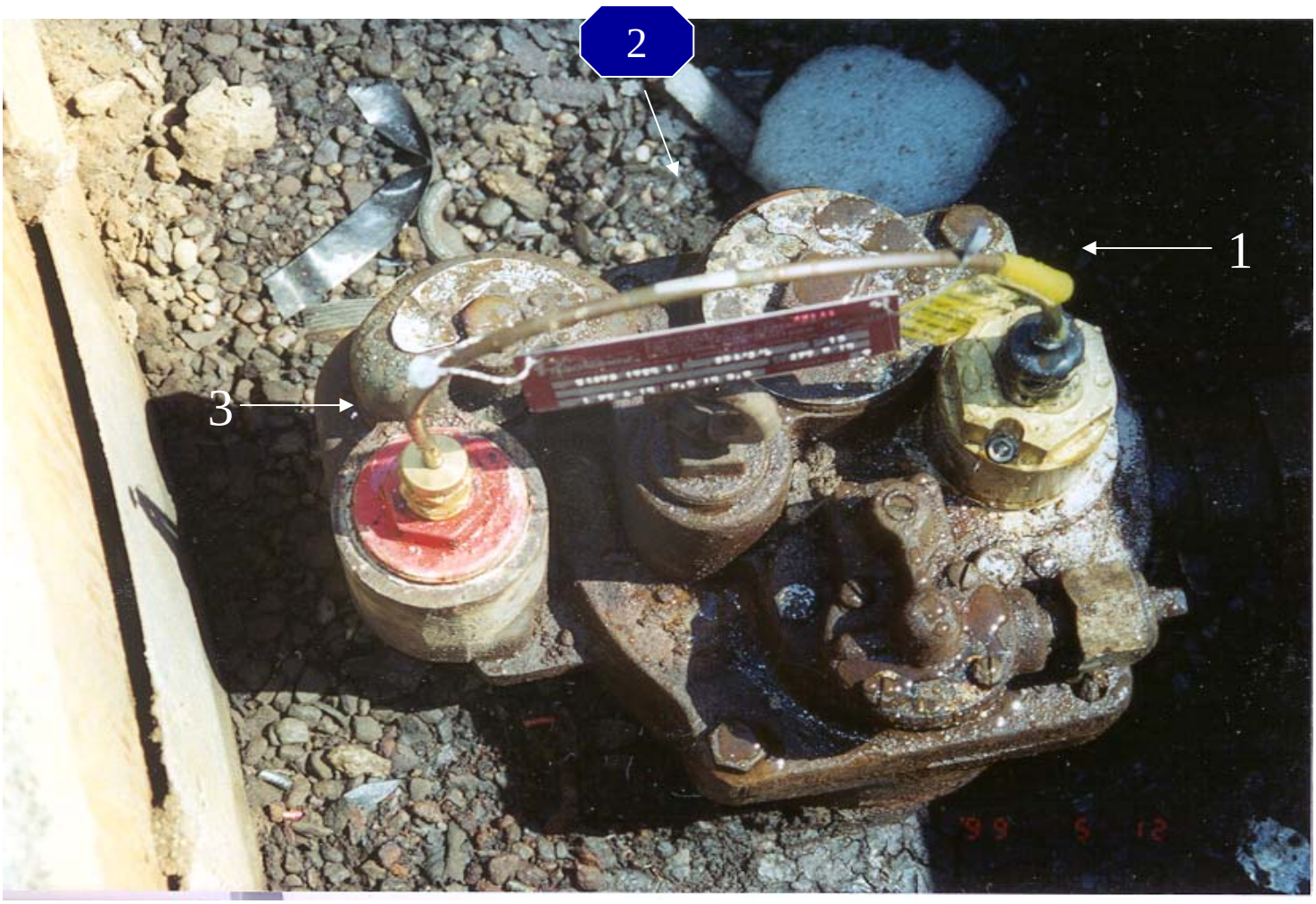




This is a typical Veeder-Root pressure transducer (1) which is capable of monitoring the product line leaks at a rate of .1, .2 and 3 gph. It is mounted where the mechanical Line Leak Detector (LLD) is usually located. The LLD in this case is not needed for leak detection because the pressure transducer is present. This unit is almost always present at Exxon/Mobil sites when a Simplicity unit is monitoring the tanks and lines. **Inspection Significance: Unless the STP is a "Red Jacket" Quantum or CPT (identification labels may be found on the STP, see inset photo) the black steel SwiftCheck® riser (2) must be installed to allow the pressure transducer to detect line leaks as low as .1 and .2 gph. Note the functional element (3) must be disabled by removing the spring and piston (4). Ask the owner or operator to verify this. If the SwiftCheck® is not present, the pressure transducer can only test to 3 gph, which does not meet the required .2 gph monthly leak detection rate. This may be acceptable if an alternate monthly means of monitoring the line is used.** *See definitions: ATG probe, pressure transducers, CPT, Quantum, SwiftCheck® and Simplicity*



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.*



3/ RELEASE DETECTION & MONITORING (RDM)

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 PROOF OF RDM MUST BE AVAILABLE

4/ CORROSION PROTECTION

METALLIC TANKS & PIPING

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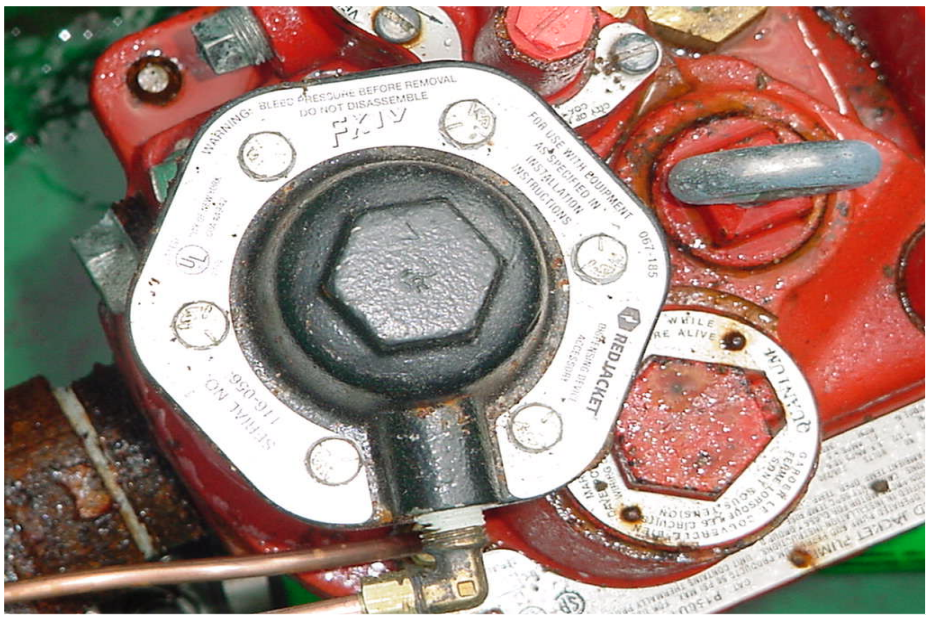
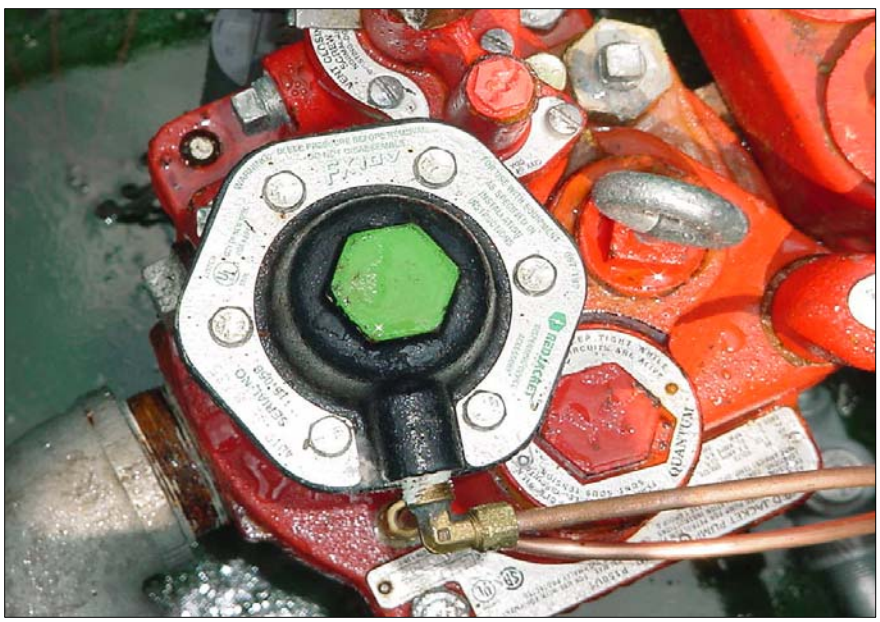
 PROOF OF 3 YEAR TEST & 60 DAY PANEL TEST (RECTIFIER)

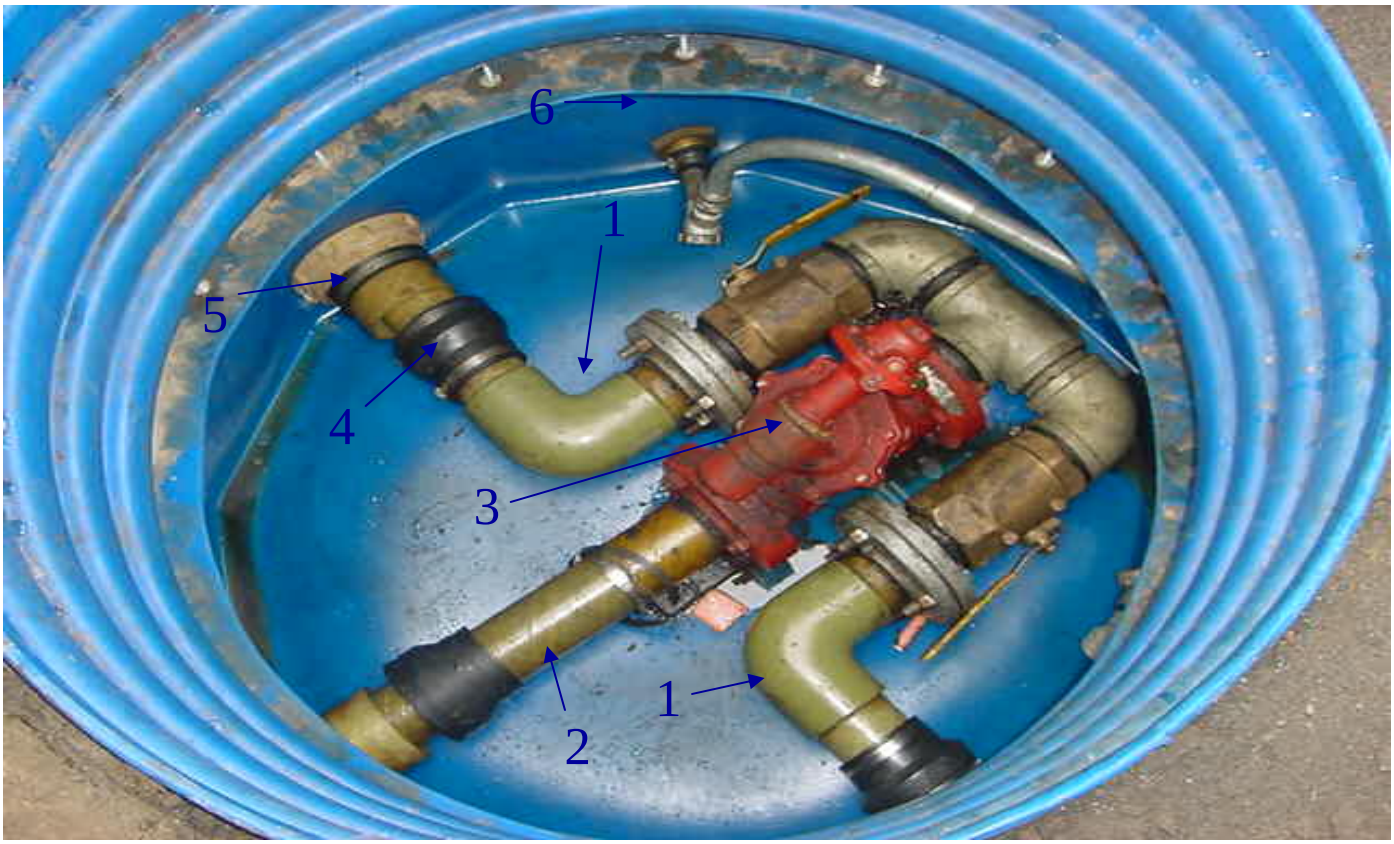
This STP sump is located at a marina in Cape May. The purpose of the twin turbine installation is to service multiple dispensers at the dock area. The lines are double-wall Geoflex®. Also note that the tank system is manifolded to another diesel UST located adjacent to the photographed UST. This is evidenced 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.**





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.*



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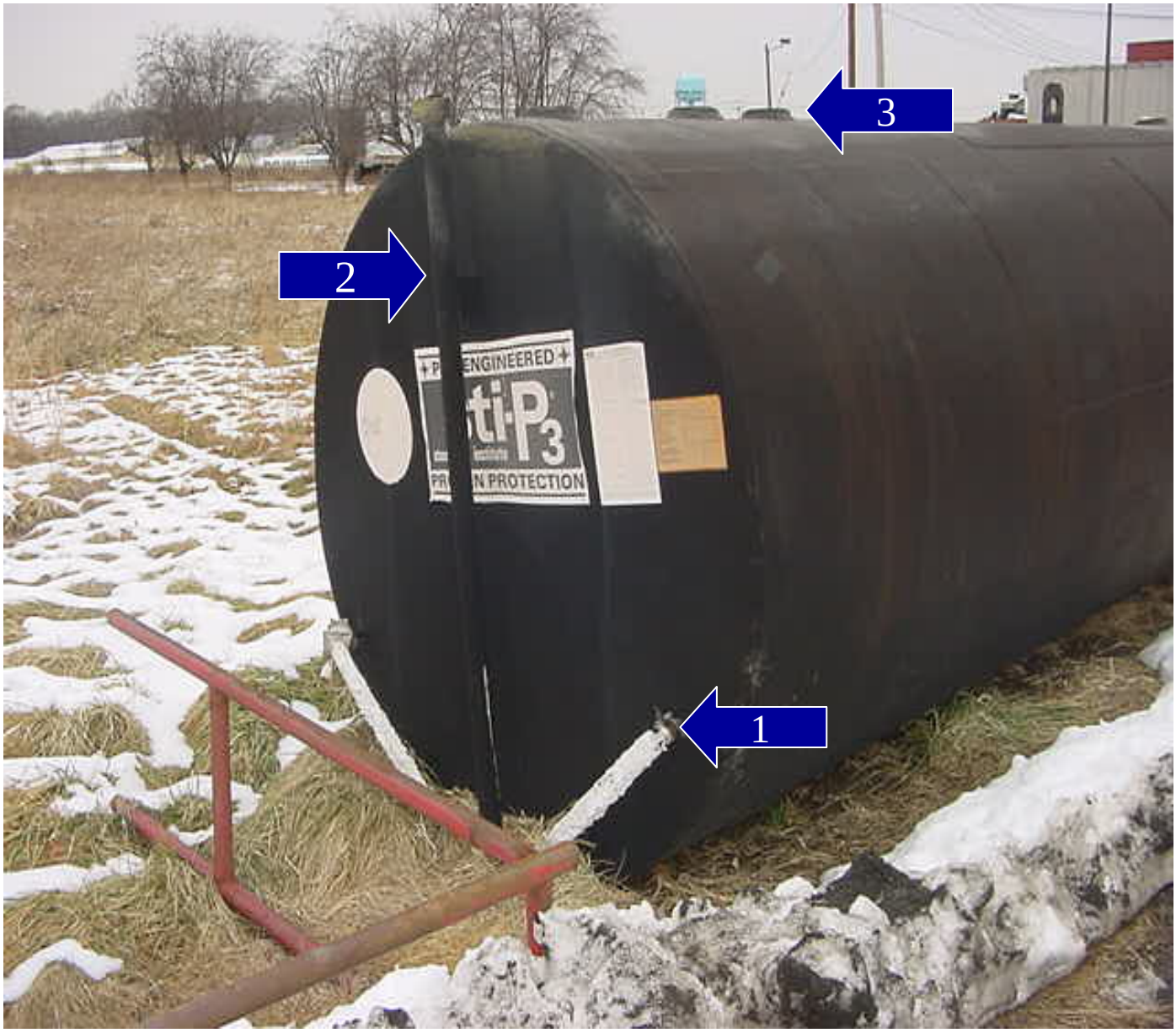
 PROOF OF 3 YEAR TEST & 60 DAY PANEL TEST (RECTIFIER)

An **sti-P_3** tank (sti = Steel Tank Institute). All sti-P_3 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-P_3, interstitial, PP4 test port.*



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- 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

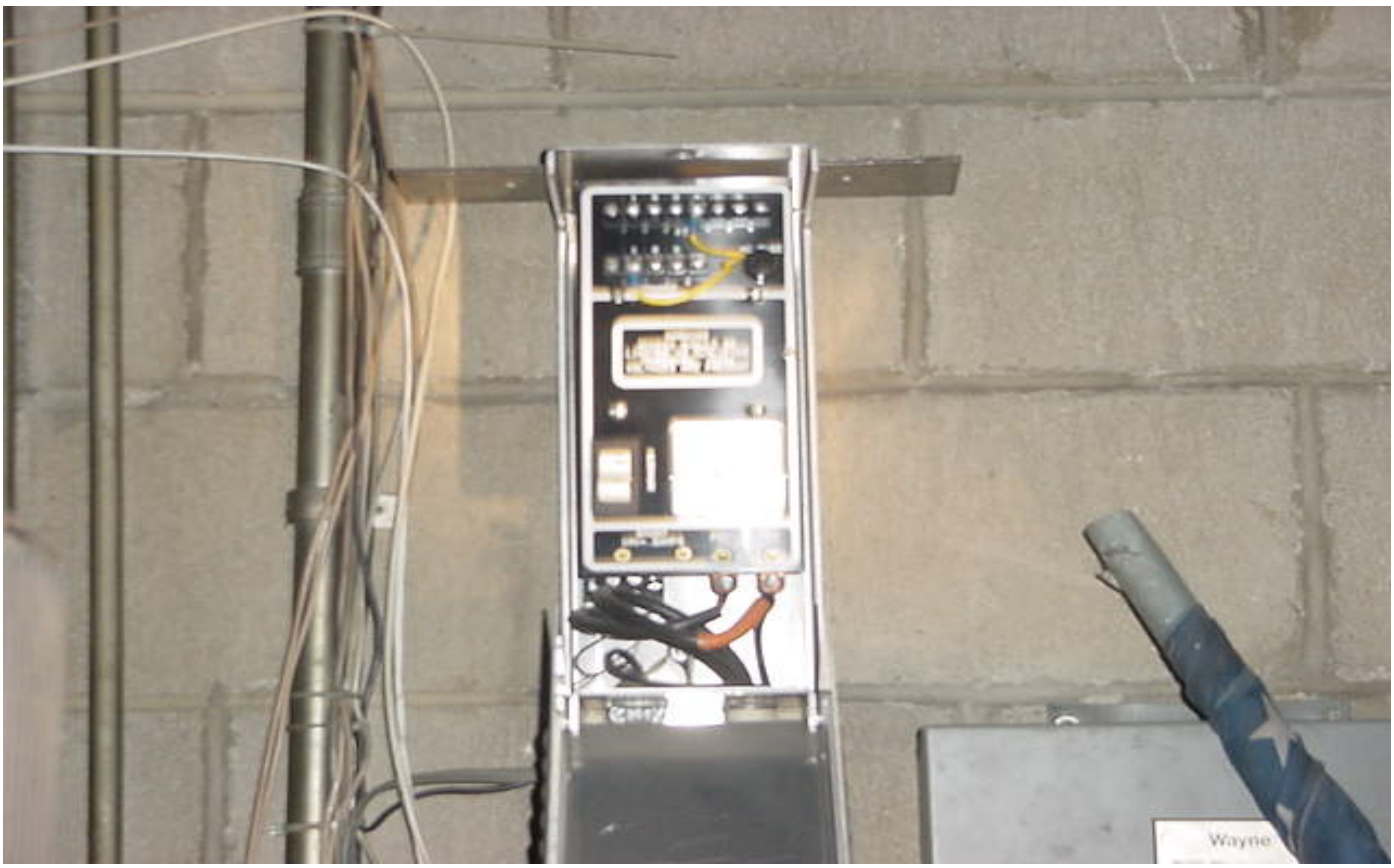
Impressed System:

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

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

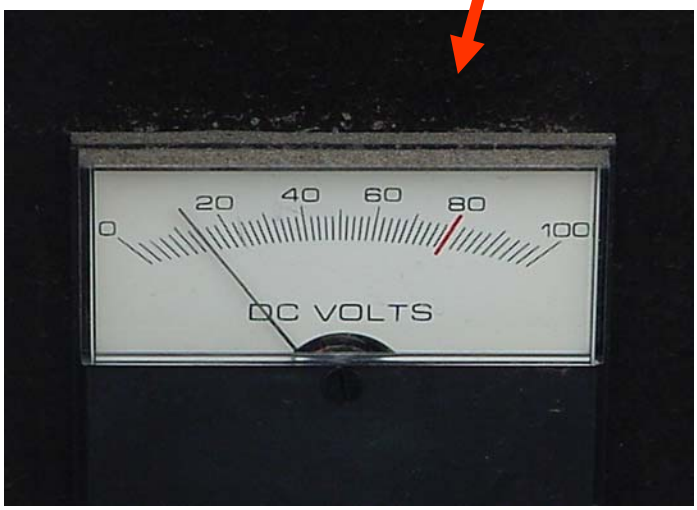
A rectifier for an impressed cathodic system. The rectifier converts alternating current (AC) to direct current (DC) which, through buried wires and cathodes, is introduced to the soil around the tank field and/or product lines. This current protects the steel tanks and lines from corrosion. Please refer 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 ampmeter 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.*



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)

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

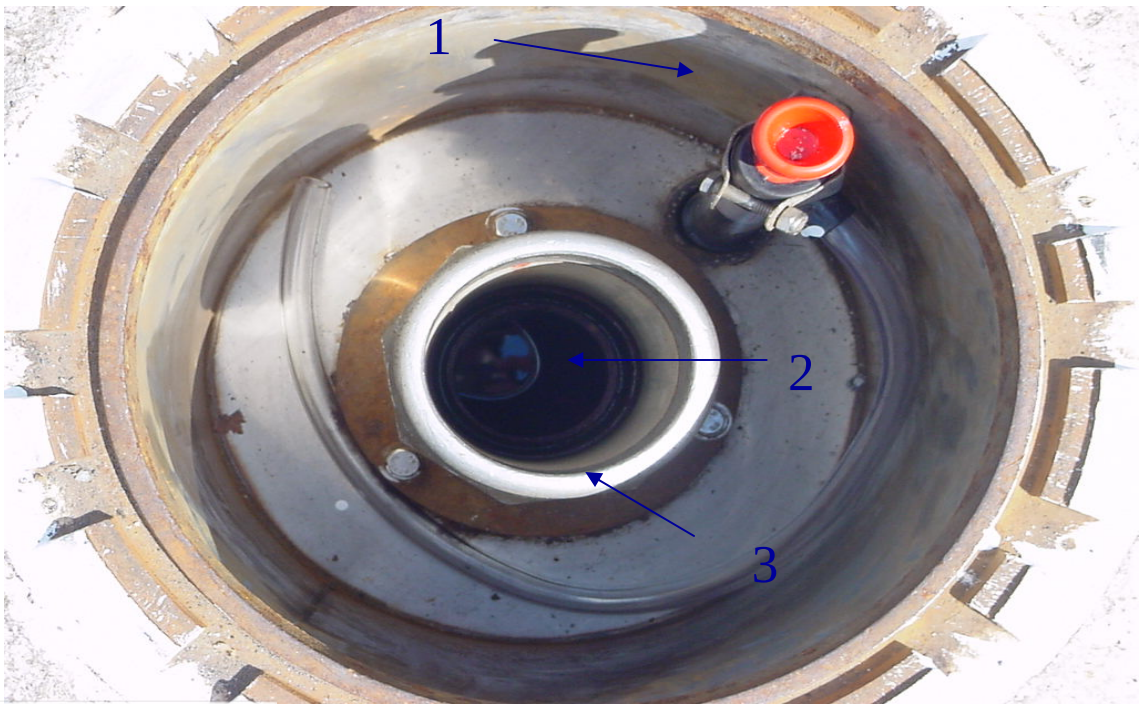
High Level Alarm that alerts the delivery person that the tank is at 90% capacity. Requires a tank probe. **HORN & LIGHT MUST BE LOCATED AT TANK FIELD**

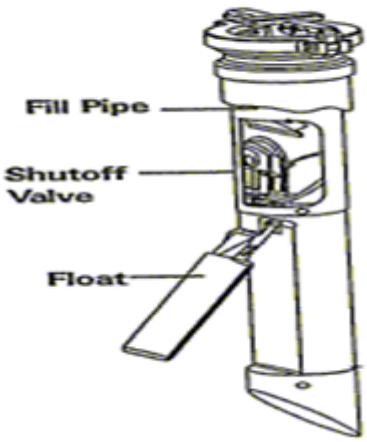
Flapper Valve (OPW™/EBW™) installed in drop tube. Closes drop tube when tank is at 95% capacity. Not compatible with pressure deliveries.

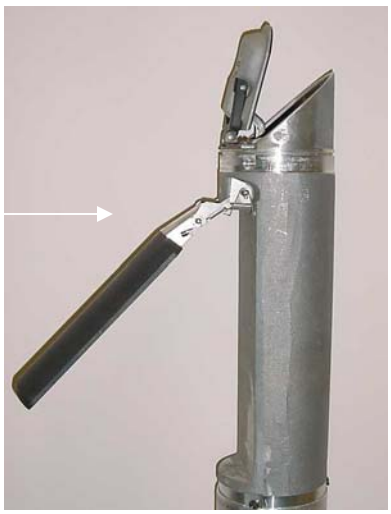
Ball Floats can not be used with pressure deliveries, remote fills, suction systems (air eliminator valves) or coaxial Stage 1 drop tubes.

 DOCUMENT OVERFILL PROTECTION

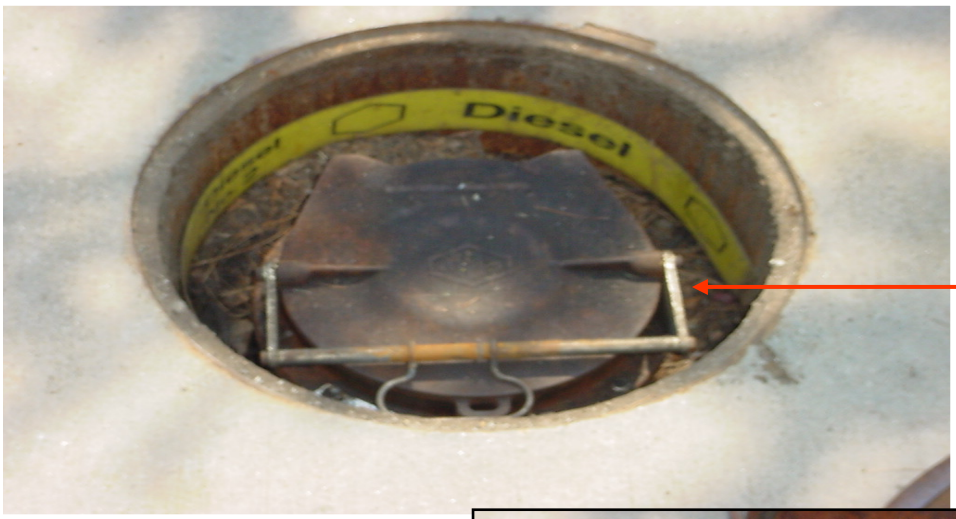
A product tight spill bucket. A manual pump (1) is used to pump water or product out of the spill bucket. An in-tank float (2) is present in the drop tube (3). The float (2) closes the drop tube when the tank is filled to 95% of its capacity. Item (4) is a diagram and photograph of the in-tank float 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.*

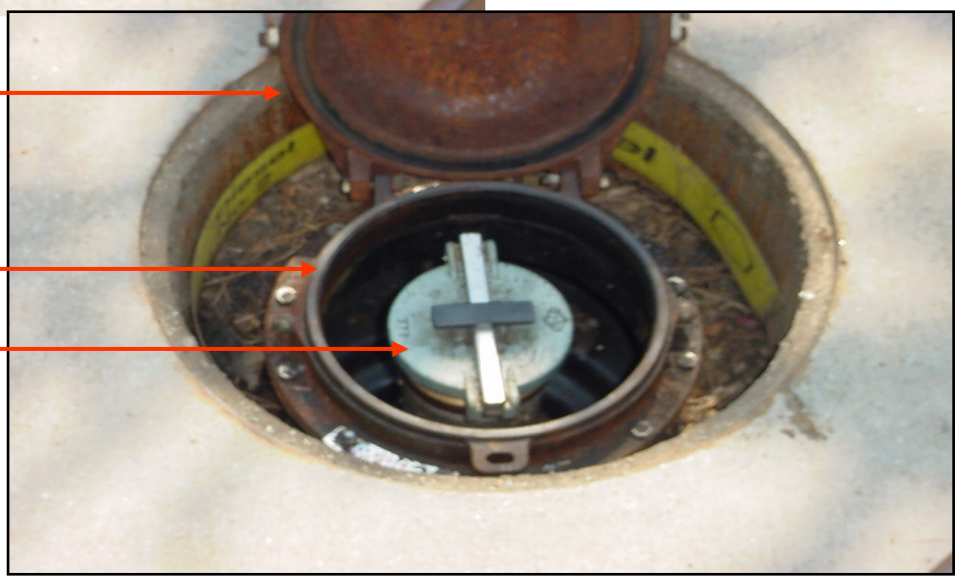




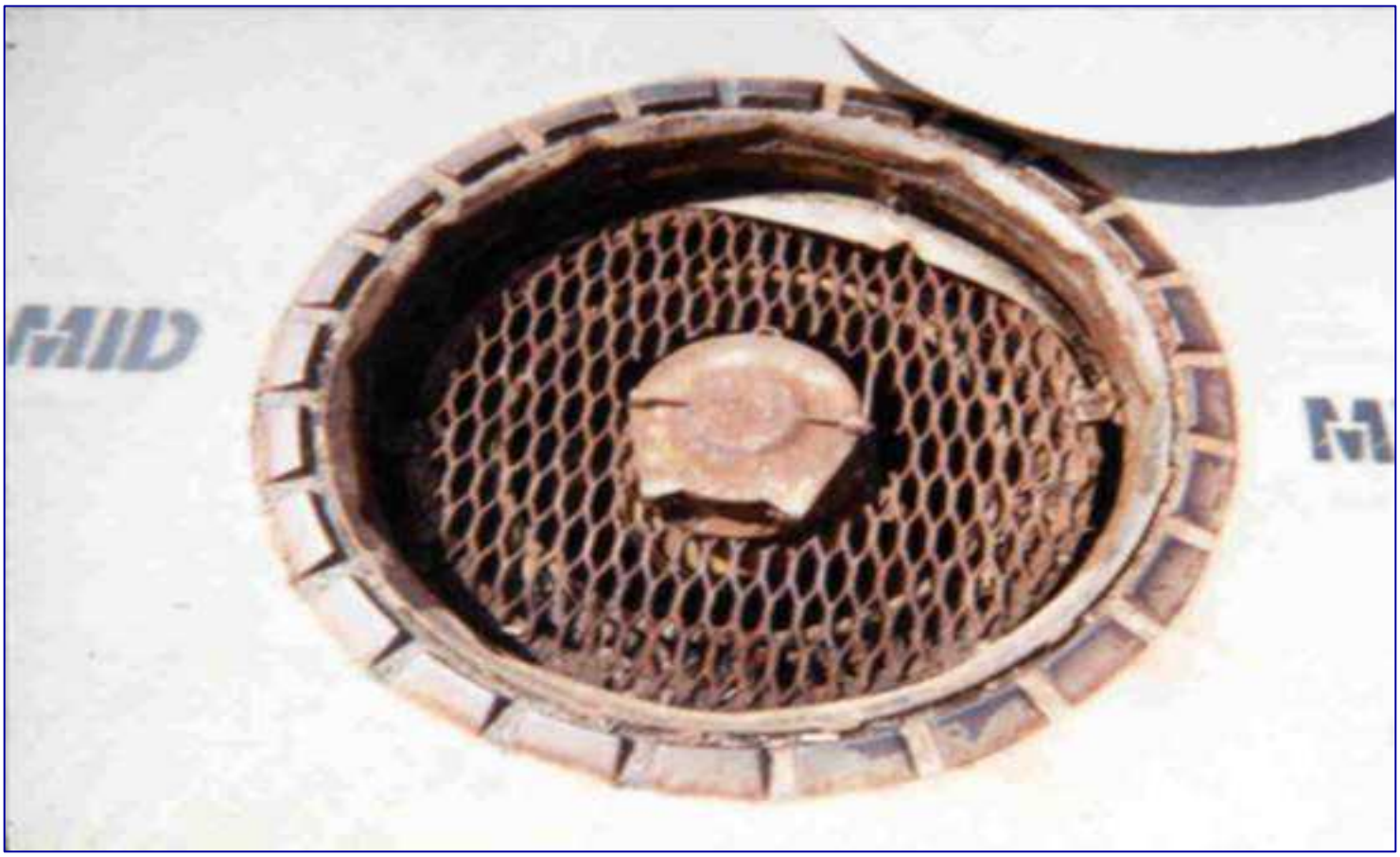


Another type of spill bucket and inner-cover is shown here. The outer, color-coded cover has been removed for the photograph. The cover has a locking bar (1) which ensures that the cover is held securely tight to prevent debris and rain water from entering the spill bucket. A rubber gasket on the inside 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.*





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 if 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*

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

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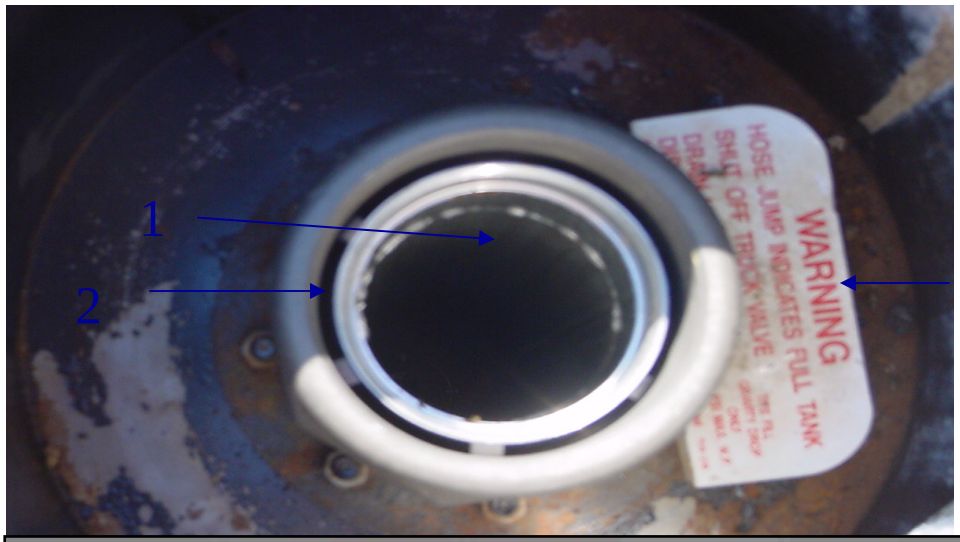
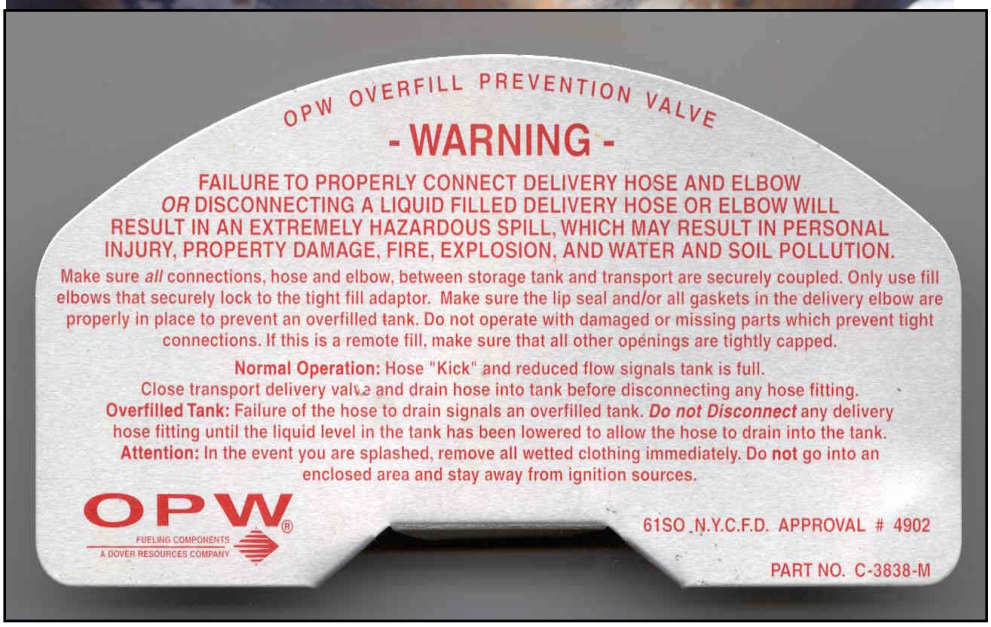
Ball Floats can not be used with pressure deliveries, remote fills, suction systems (air eliminator valves) or coaxial Stage 1 drop tubes.

 DOCUMENT OVERFILL PROTECTION

This 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 over filling 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.*





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

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 overfilling 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.**

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

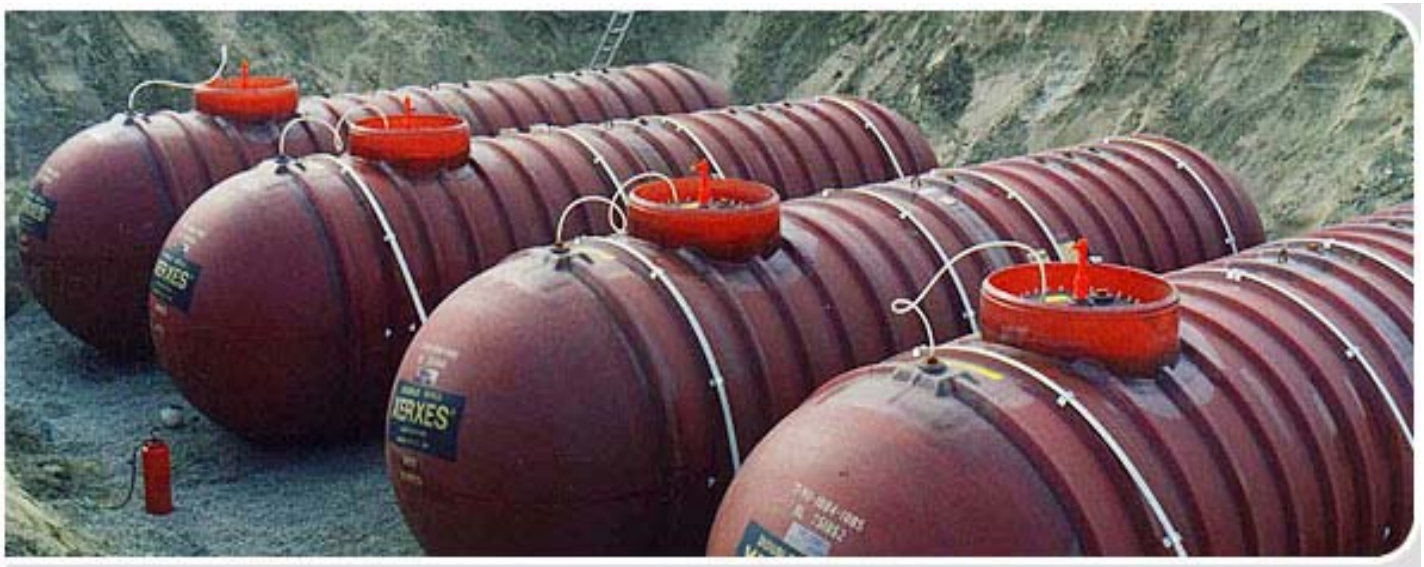
Fiberglass Reinforced Plastic (FRP)
(if ♦: RDM NOT Required)

Coated Steel (verify actual construction)

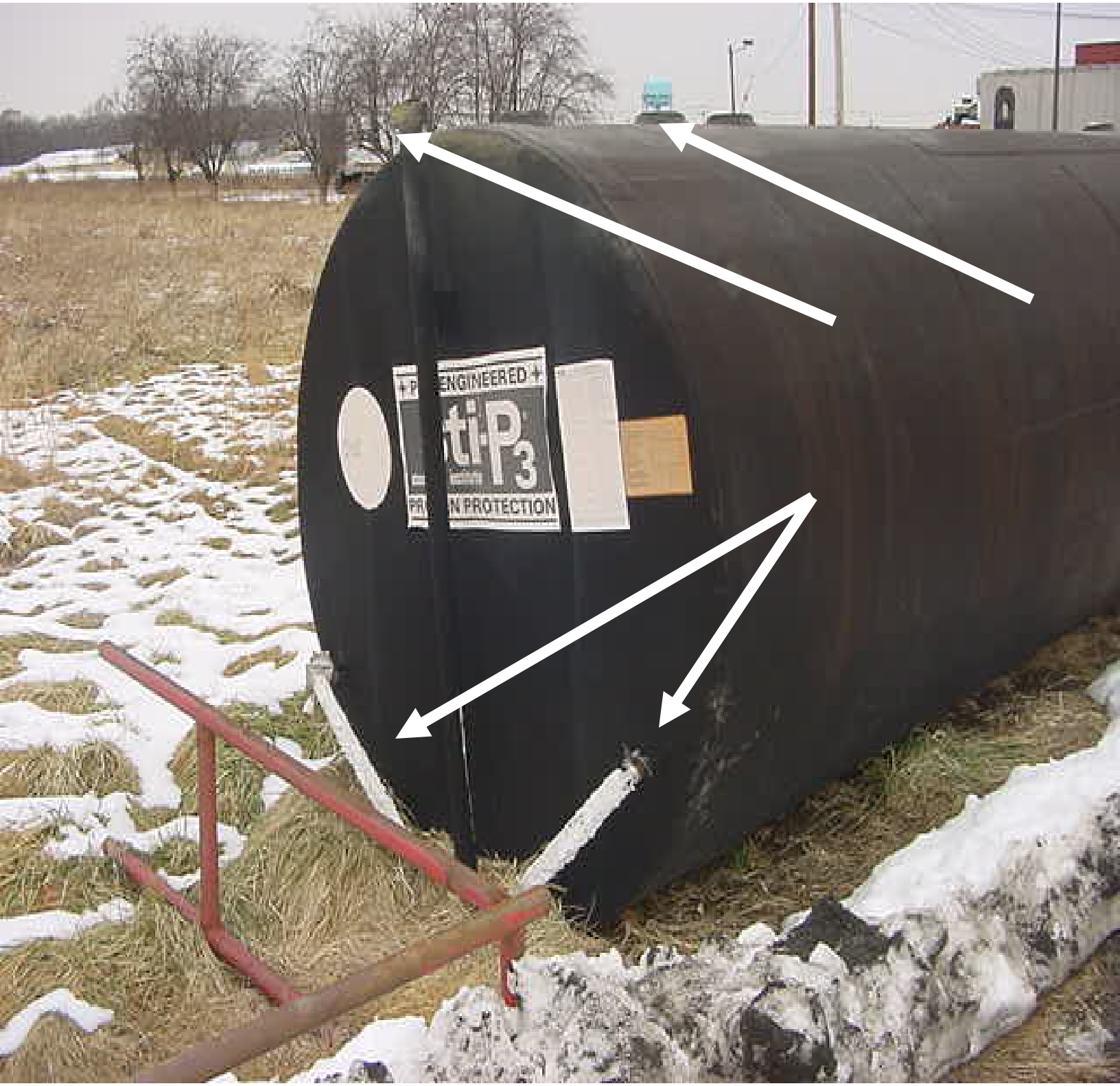
Steel w/Passive System
(if ♦: RDM NOT Required)
(cathodic test every 3 years)

Steel w/Impressed System
(if ♦: RDM NOT Required)
(cathodic test every 3 years)

Flex Piping
(if ♦: RDM NOT Required)

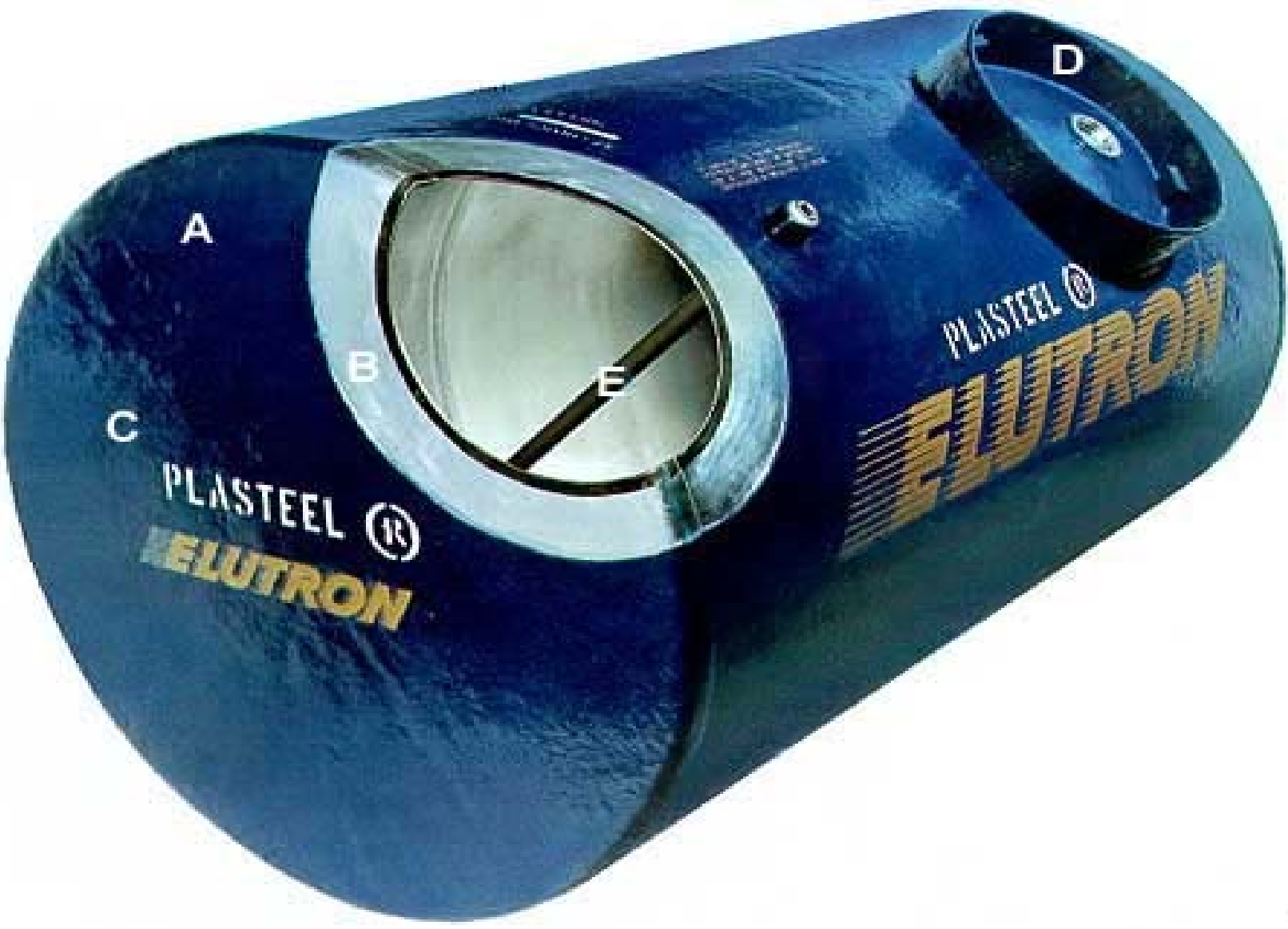

XERXES


StiR
TWIN
DRIVE


ENGINEERED
ti-P3
PROTECTION

UL 1746?

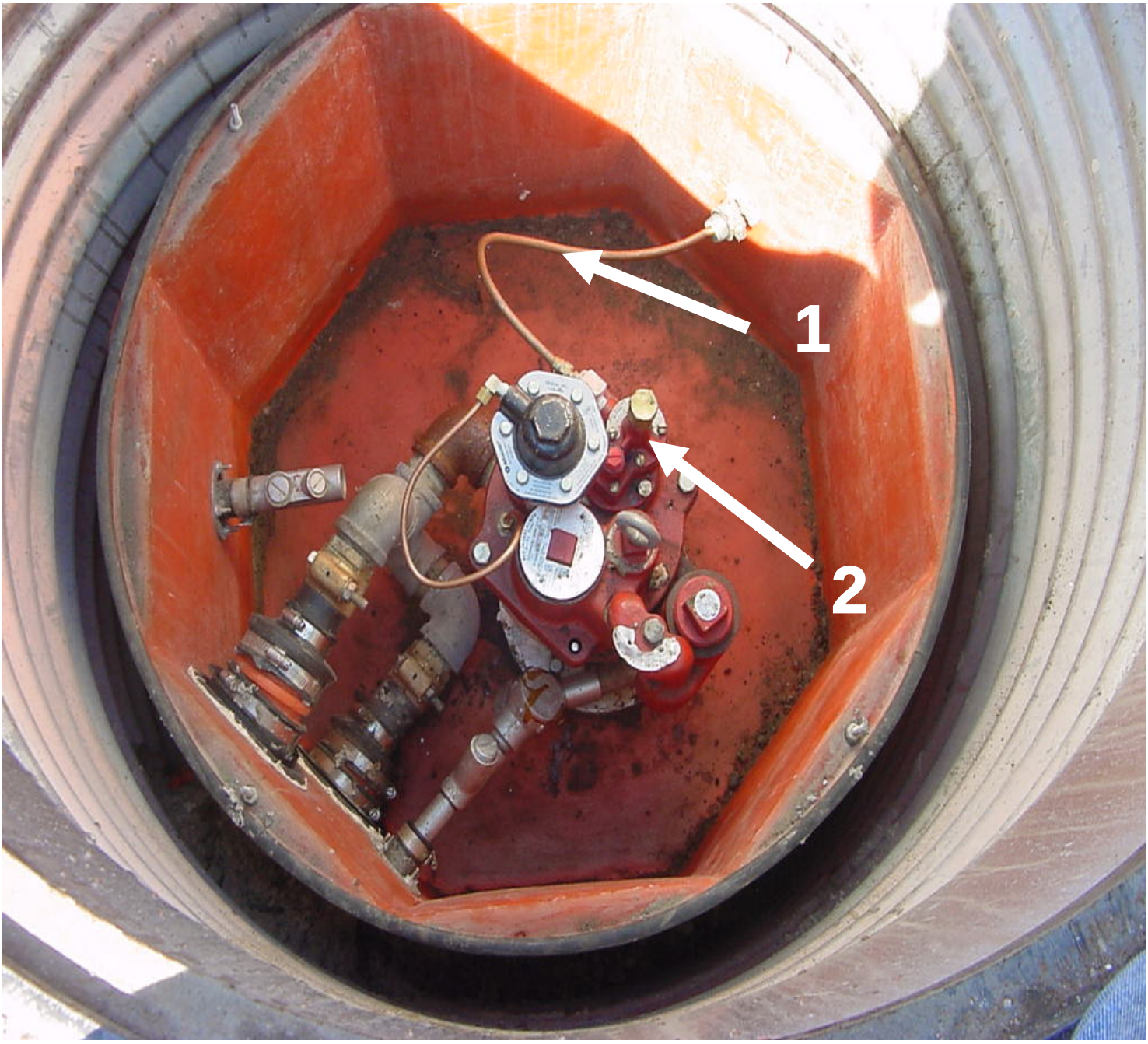

PROPANE
OPEN

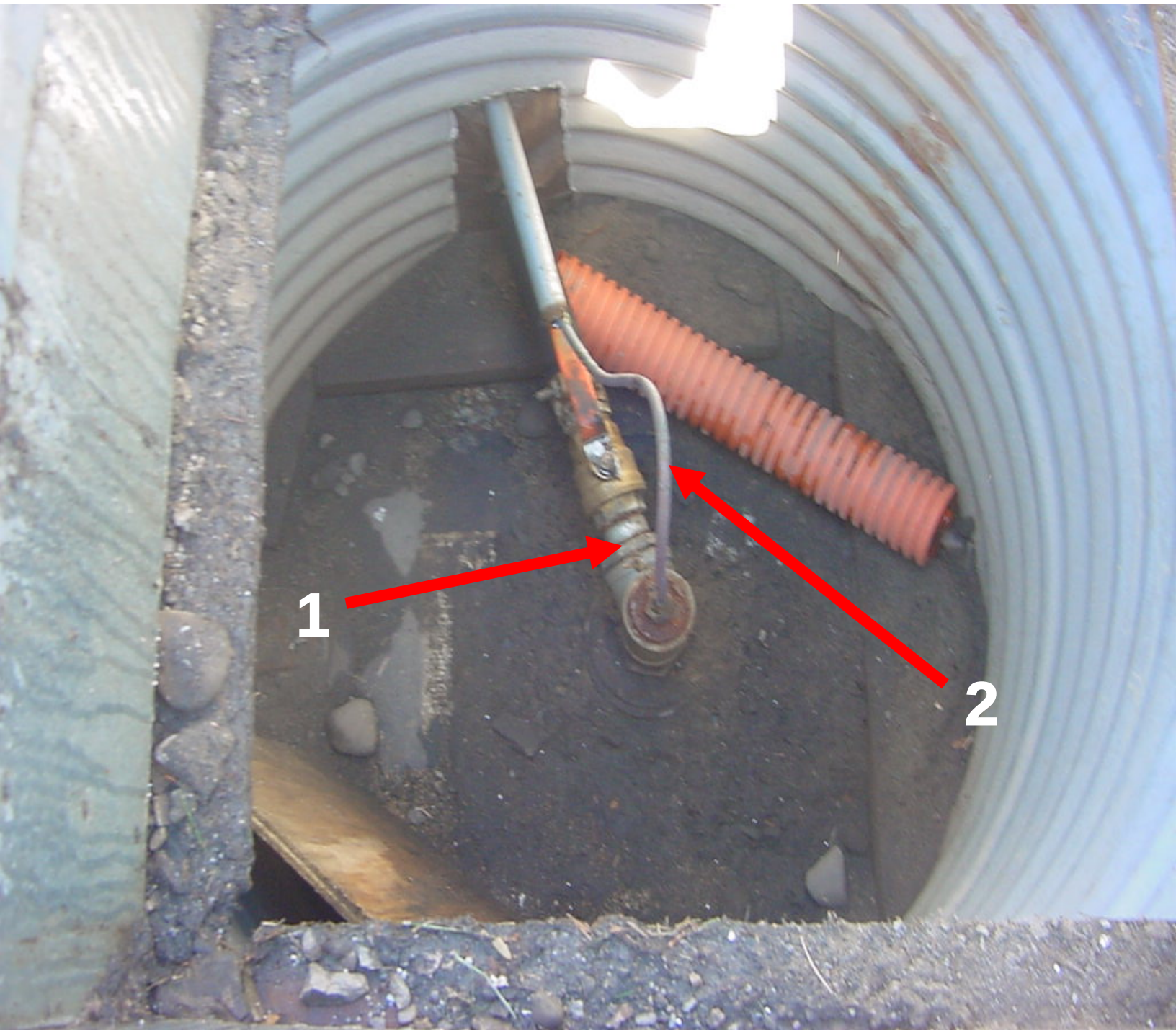


UL 1746?

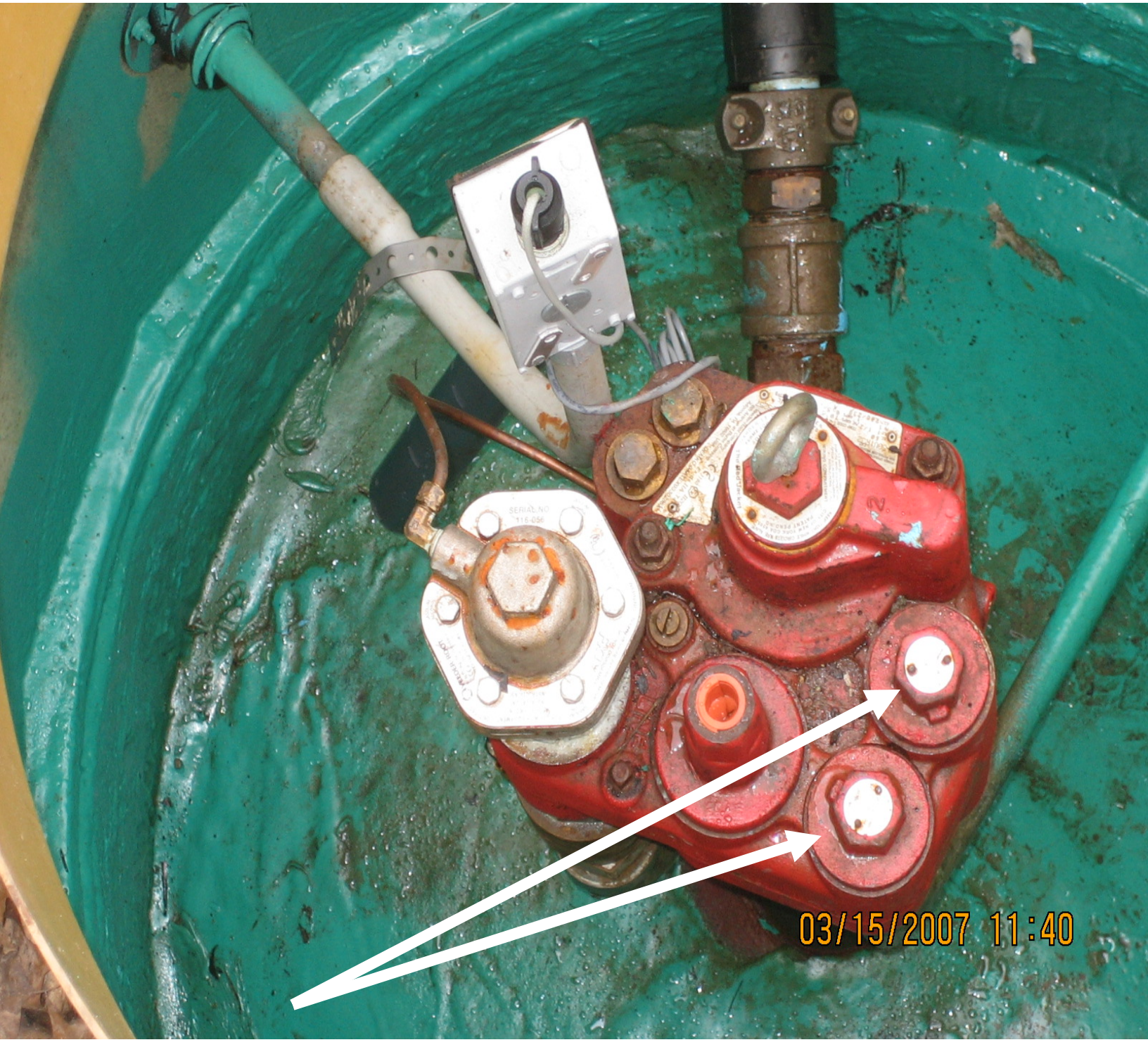
PIPING CONSTRUCTION


08/23/2006 11:05


1
2


1
2


01/10/2007 11:45


03/15/2007 11:40

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


03/15/2007 11:40

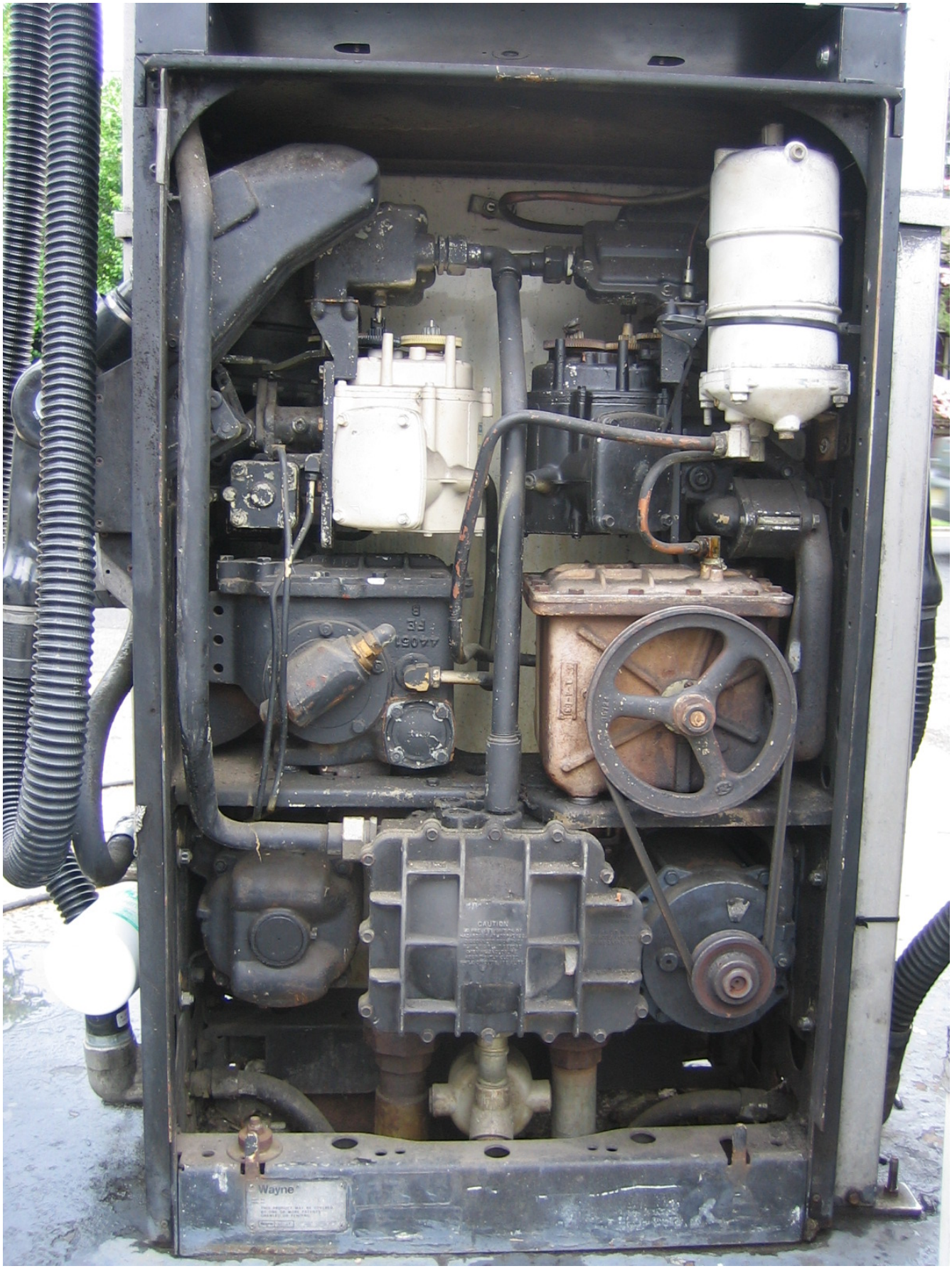

01/10/2007 11:45


02/27/2008 16:39

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
Getty
Sale
Gallons
Price Per Gallon
Including tax
Sale
Gallons
Price Per Gallon
Including tax
Unleaded Regular
87
DETERGENT GASOLINES
Premium Unleaded
92
Getty
CREDIT CARDS
FLEET CARDS
DEBIT CARDS
Getty


Wayne

Release Detection Monitoring (tanks)

Summary of Options

Common

- Automatic Tank Gauging
- Interstitial Monitoring

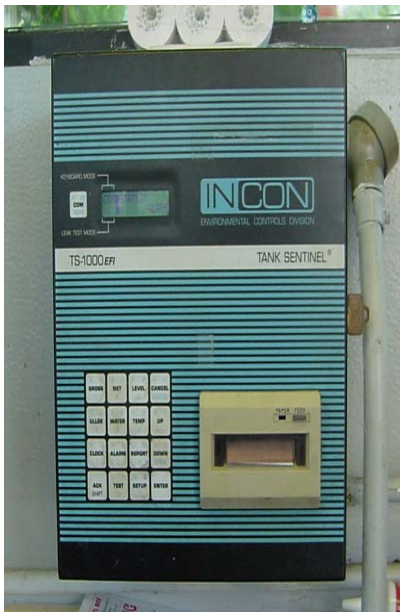
Less Common

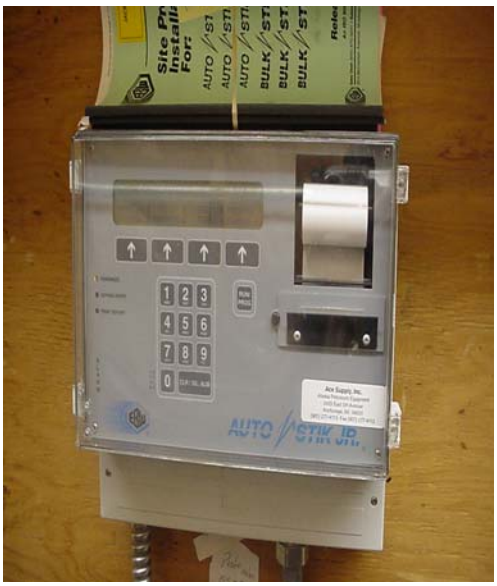
- Inventory Control and Tightness Testing
- Statistical Inventory Reconciliation

Uncommon

- Manual Tank Gauging
- Soil Vapor Monitoring
- Groundwater Monitoring

Automatic Tank Gauging





ATG Probes

General Requirements

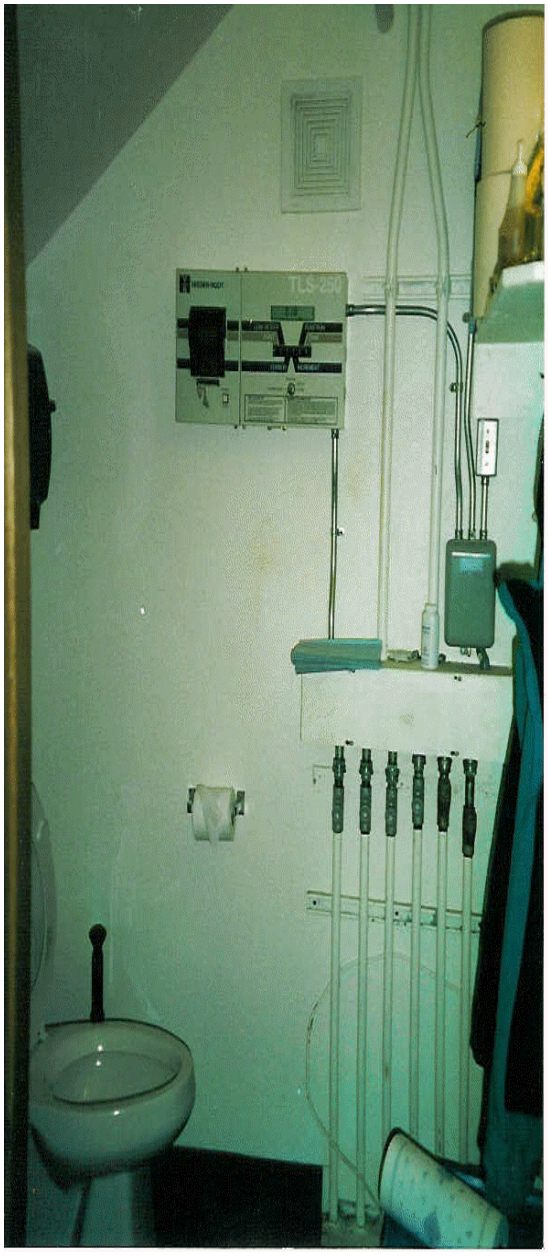
- Must test for leaks at least every **30** days.
- Can detect a **0.2** gph leak.
- Must be a valid, passing test. (50% or greater volume, unless CSLD/SCALD is being used)
- Is third party approved for the application.
- Must have maintenance performed per **Manufacturer** specifications.
- Must maintain 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.

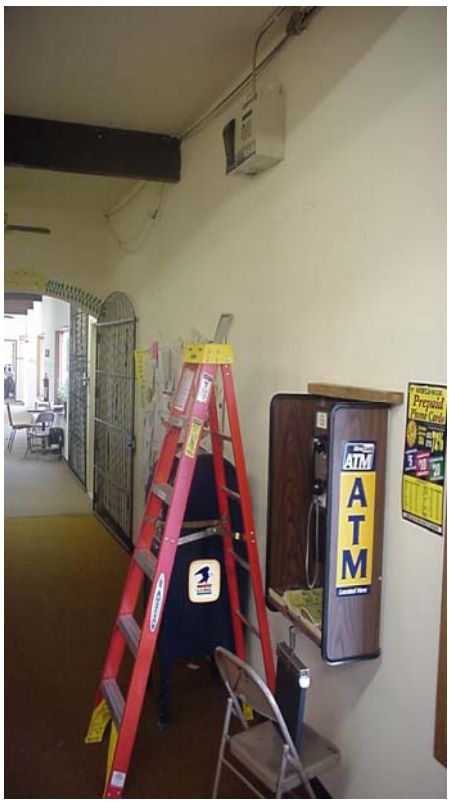
CSLD

Continuous Statistical Leak Detection

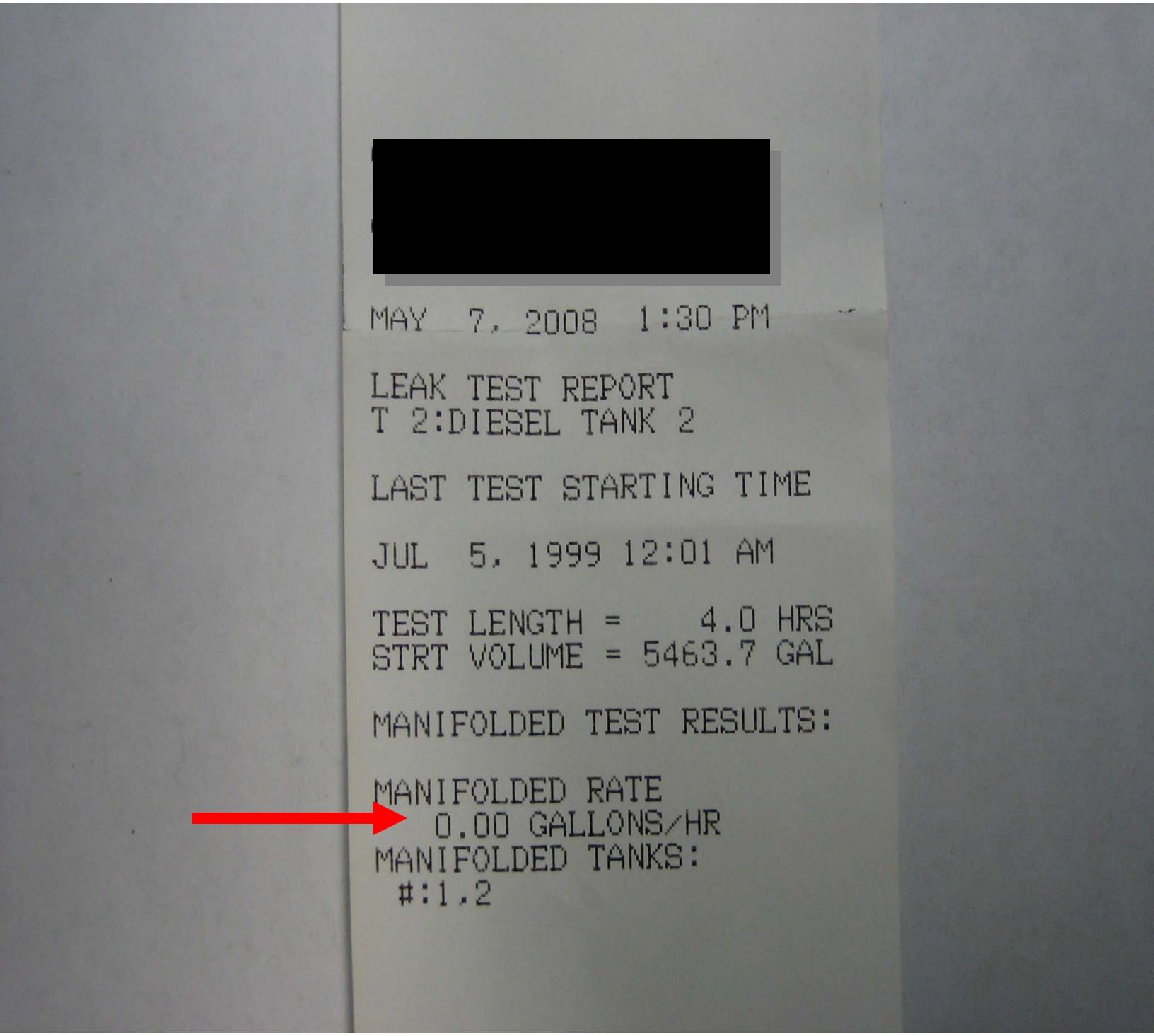
- 3rd Party Certified from 5-95% tank volume
- Maximum separate or combined tank volume is 38,170 gallons
- Veeder-Root chip compatible with TLS-300 and 350 models
- Also an option for stations that keep low volume of higher octane fuels

Find the Tank Gauge

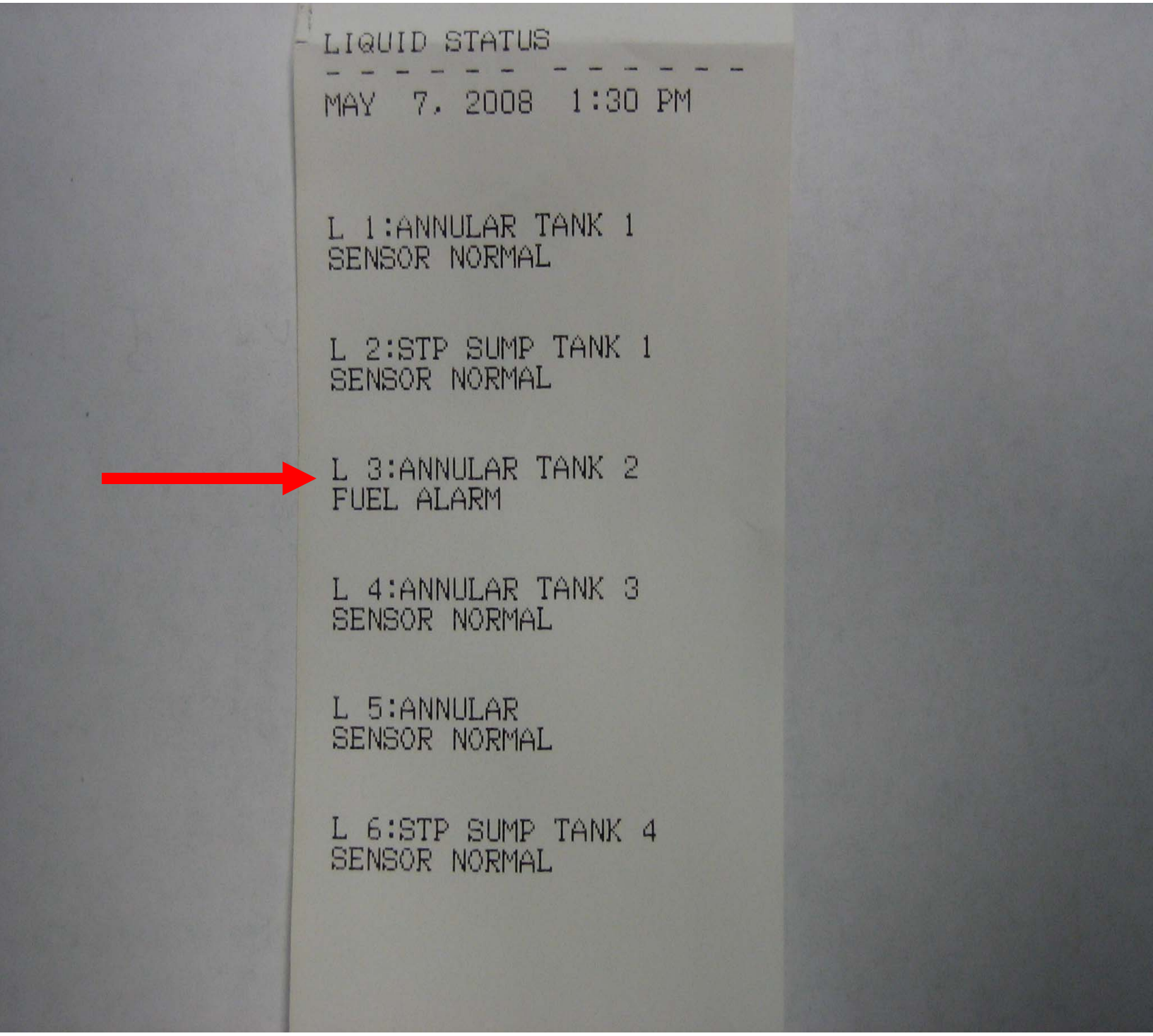




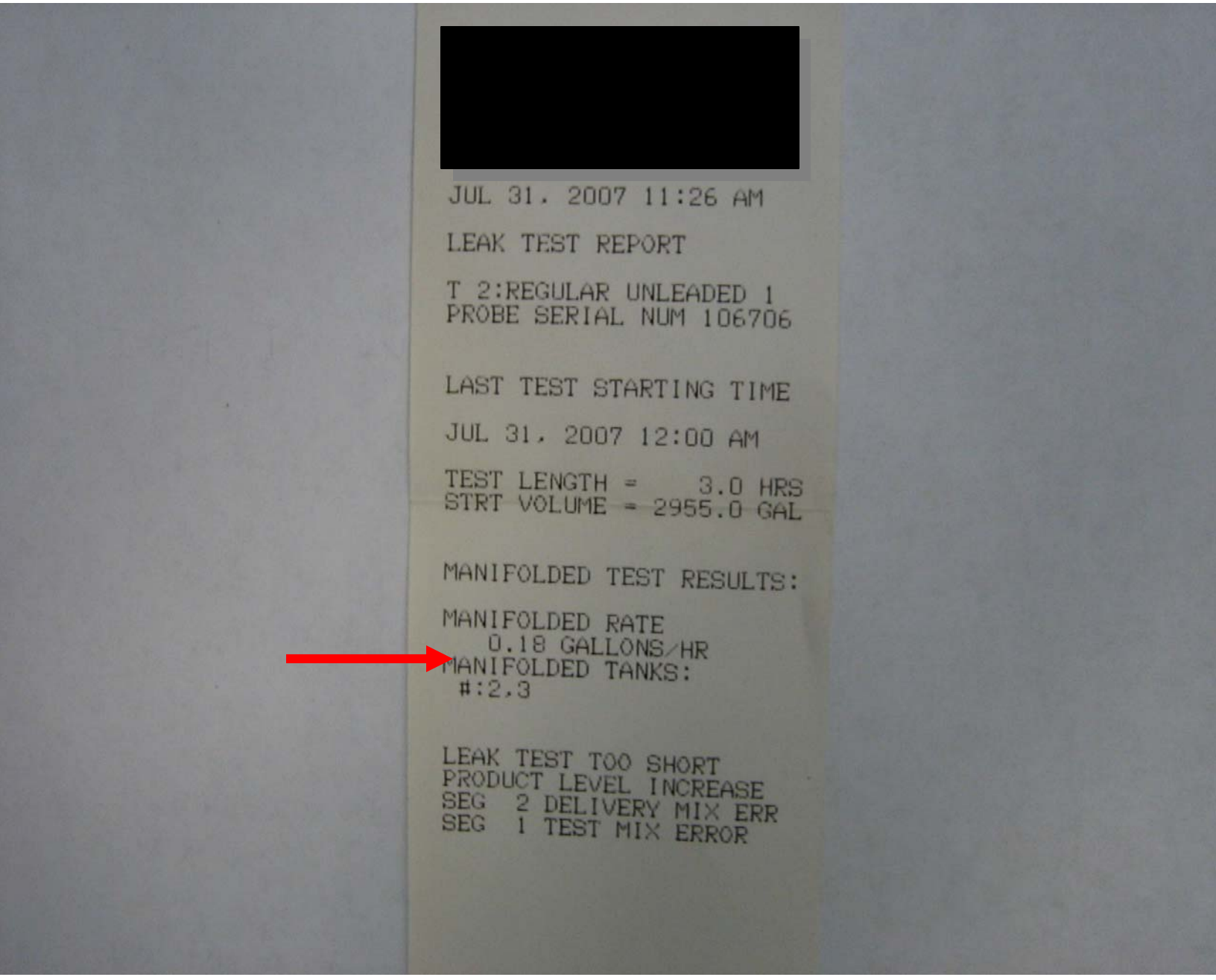
Do we have a problem here?



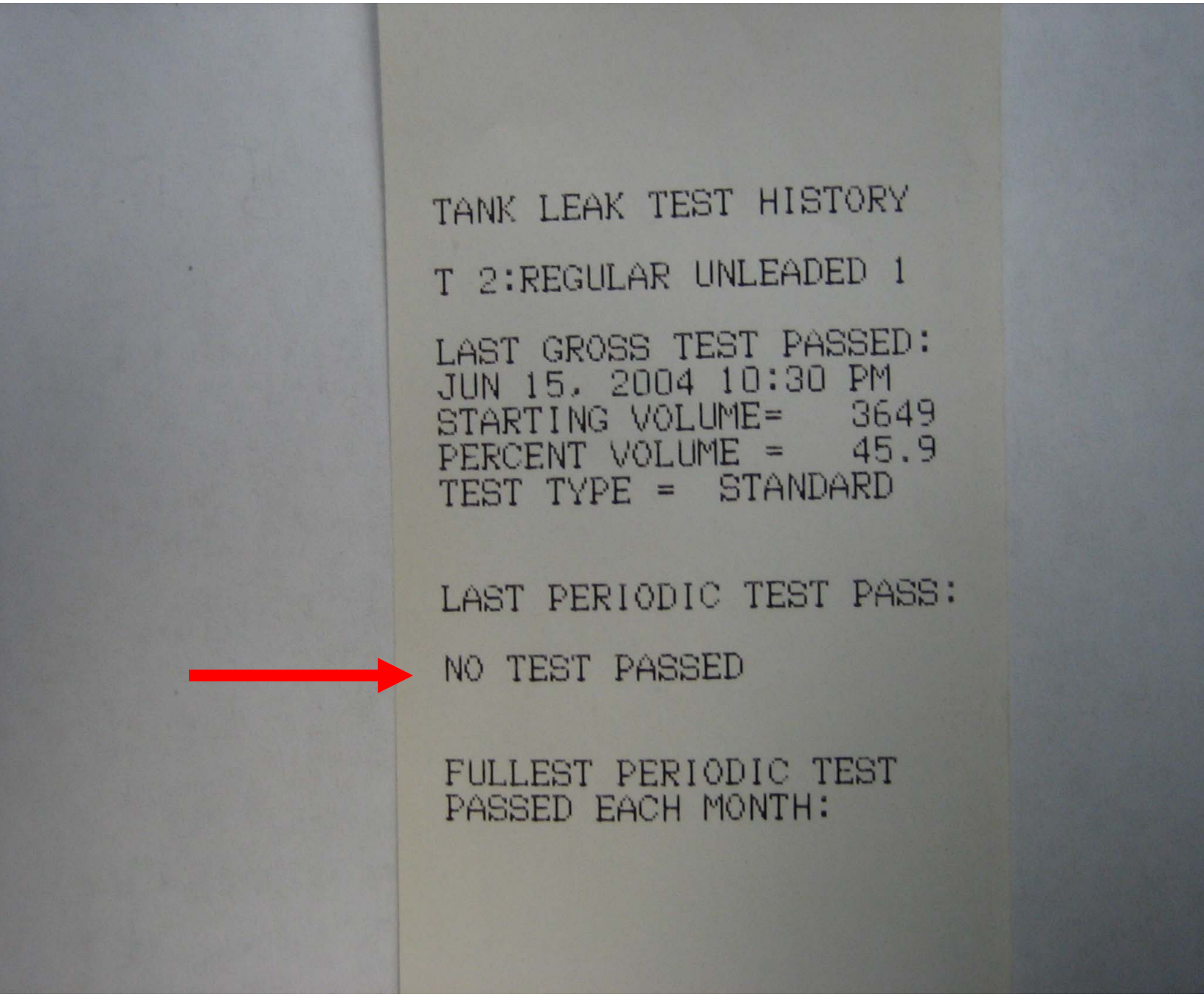
OOPS!


LIQUID STATUS
MAY 7. 2008 1:30 PM
L 1:ANNULAR TANK 1
SENSOR NORMAL
L 2:STP SUMP TANK 1
SENSOR NORMAL
L 3:ANNULAR TANK 2
FUEL ALARM
L 4:ANNULAR TANK 3
SENSOR NORMAL
L 5:ANNULAR
SENSOR NORMAL
L 6:STP SUMP TANK 4
SENSOR NORMAL

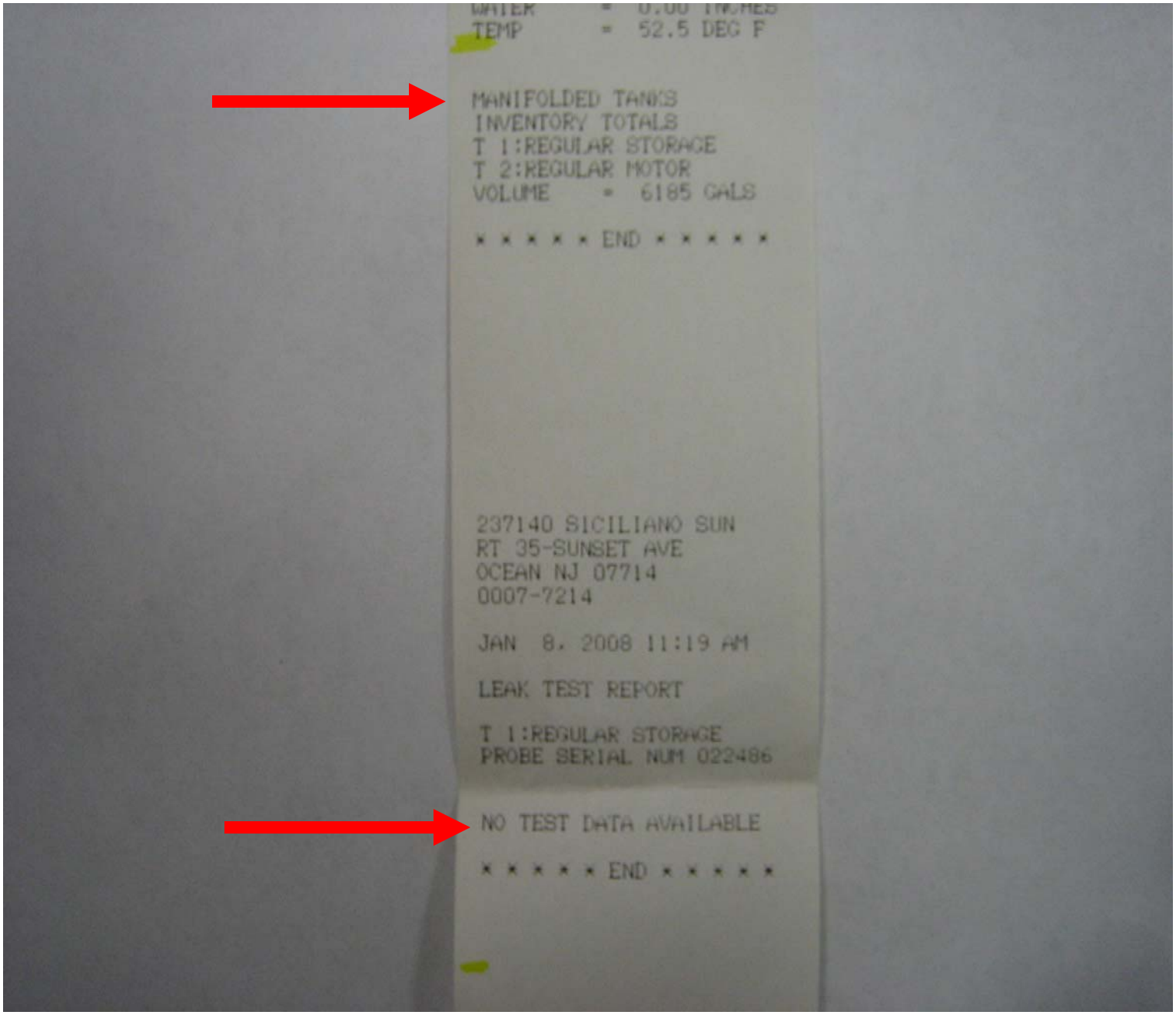
Look Familiar?



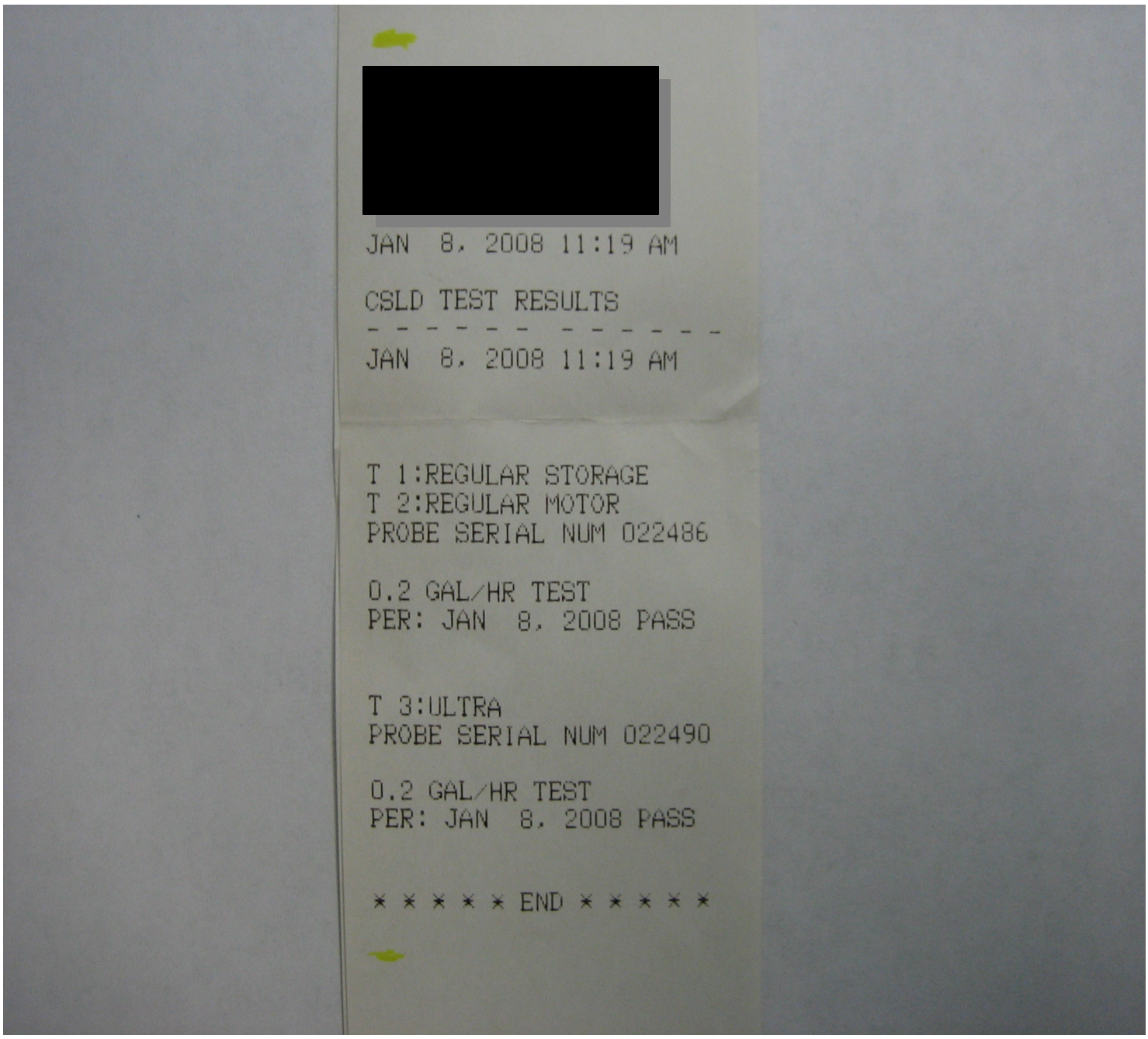
D’oh!


TANK LEAK TEST HISTORY
T 2:REGULAR UNLEADED 1
LAST GROSS TEST PASSED:
JUN 15, 2004 10:30 PM
STARTING VOLUME= 3649
PERCENT VOLUME = 45.9
TEST TYPE = STANDARD
LAST PERIODIC TEST PASS:
NO TEST PASSED
FULLEST PERIODIC TEST
PASSED EACH MONTH:

Here we go again...

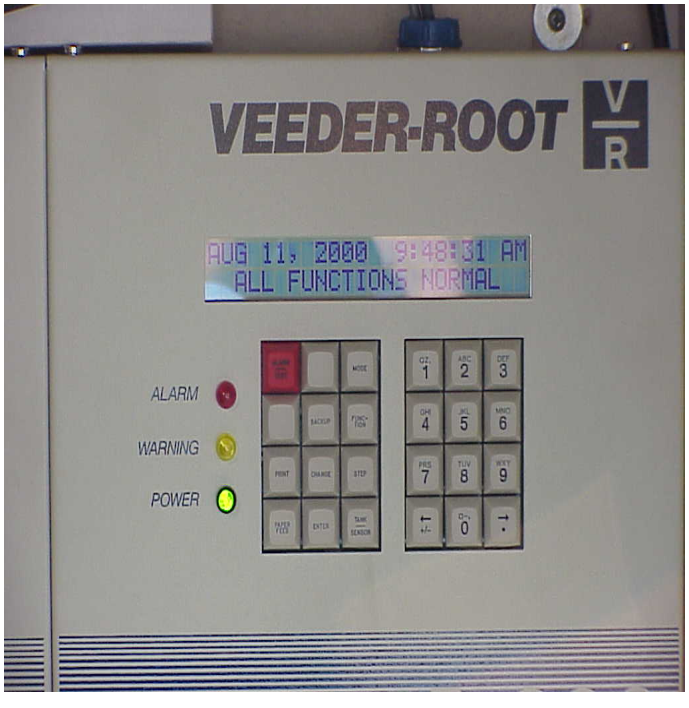


It’s OK!!!


[redacted]
JAN 8, 2008 11:19 AM
CSLD TEST RESULTS
- - - - - - - - - - - - - -
JAN 8, 2008 11:19 AM
T 1:REGULAR STORAGE
T 2:REGULAR MOTOR
PROBE SERIAL NUM 022486
0.2 GAL/HR TEST
PER: JAN 8, 2008 PASS
T 3:ULTRA
PROBE SERIAL NUM 022490
0.2 GAL/HR TEST
PER: JAN 8, 2008 PASS
* * * * * END * * * * *

Interstitial Monitoring

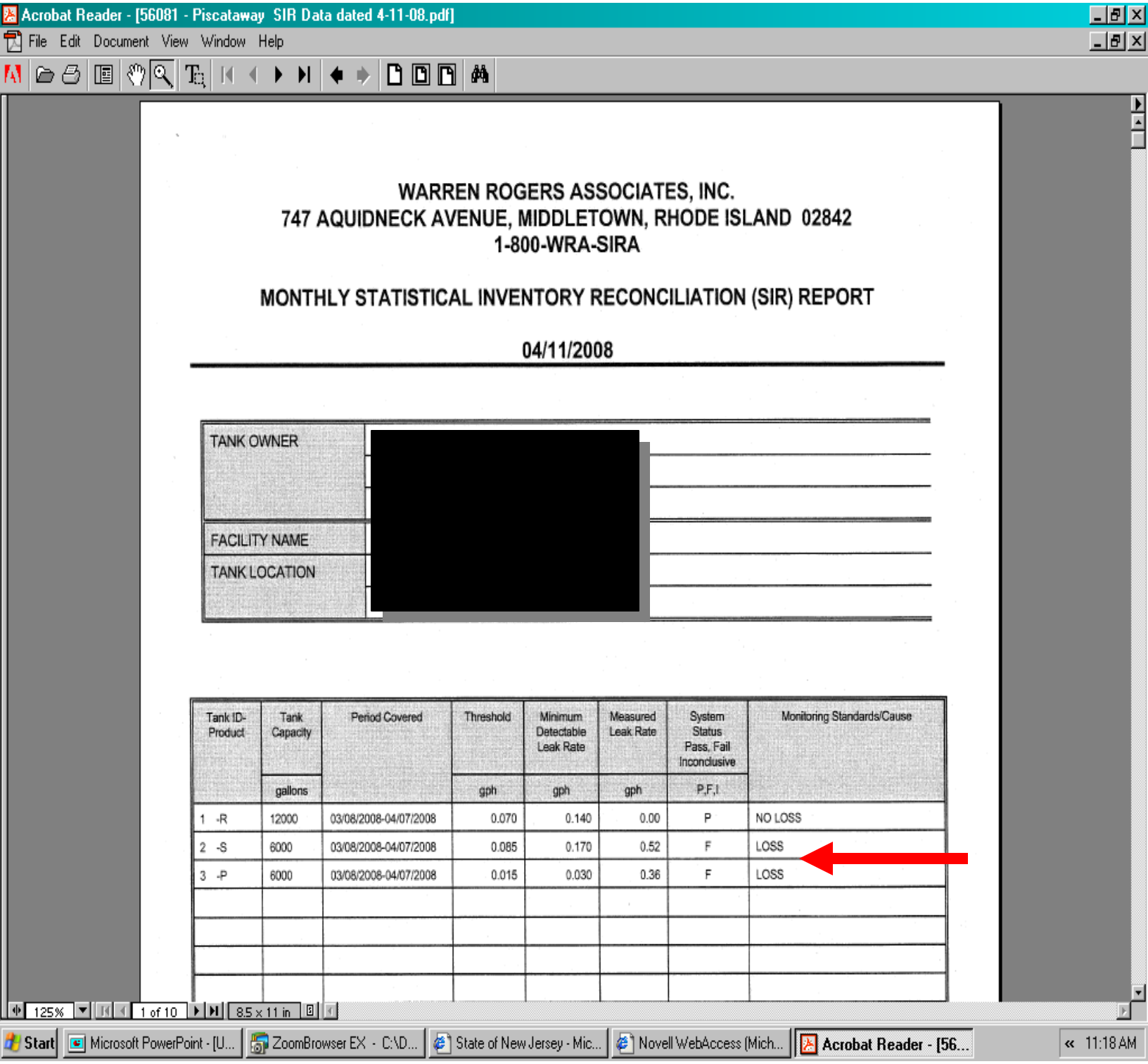
- Double walled tanks only
- Can be continuous or every thirty days
- Annular Sensors (liquid only) or sticking
- Location commonly depends on construction of the tank
- Sensors connect to an ATG panel
- Liquid Status (hit function button until you see that)



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



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.

Manual Tank Gauging

- Most commonly used for Waste Oil USTs
- Stick readings taken before and after a minimum 36 hours of “down-time” for the UST (no delivery or removal of product from the tank)
- Only valid for tanks less than 2,000 gallons capacity, **stand-alone for 1,000 gallons or less only**
- Precision test every 5 years for the first 10 years of the life of the tank
- After 10 years, a form of monthly monitoring is required

Manual Tank Gauging

Manual Tank Gauging Applications:

This method of release detection monitoring (RDM) can be used as a "stand alone" method of RDM for all tanks of 1000 GALLONS OR LESS (Both State & Federal Regulations indicate up to 550 gallons, BUT policy allows 1000 gallons (this change has been embodied in the proposed 2008 UST Reg changes). This includes tanks that contain motor fuels (gasoline/diesel) and waste/new motor oil. When using tank testing for leak detection, it must be in conjunction with inventory control and monthly reconciliation. However, **tanks from 1,001 to 2,000 gallons manual tank gauging may be substituted for the required inventory control with monthly reconciliation.**

Clarification of tank testing frequency:

After installing a new tank that has corrosion protection or after upgrading an old tank with corrosion protection, tank testing may be used for a period of ten years after the installation or upgrade date. The required tank testing frequency is every 5 years.

After the 10-year period, you must use a monthly monitoring method, such as interstitial monitoring or automatic tank gauging (ATG), however, the O/O may continue to use tank tightness tests which must be performed on a **monthly** basis. **The use of manual tank gauging does not meet the tank system's leak detection requirements for piping.** Pressurized and some suction piping must use other methods of leak detection, such as interstitial monitoring.

Refer to 6.5(a)2 for protocol concerning stick readings and the minimum 36 hour "quiet time". The O/O is required to take two stick readings (to the nearest 1/8 inch) and average these readings. Then at the end of a minimum of 36 hours (no addition or removal of product) two more stick readings are taken and averaged. The difference between the beginning and ending readings (stick readings are converted to gallons) are compared to the **"Weekly Standard"** table 6.5(a)2v. This is done every week, and then once a month all four weekly readings are totaled and compared to the same table but under **"Monthly Standard".** If the differences do not exceed the table values, the tank (not product piping) is considered not to be leaking.

Inventory Control w/Monthly Reconciliation (1% + 130 gal)

- Daily stick readings, totalizer readings, delivery totals calculated for 30 days, then total throughput is multiplied by 1% + 130 gallons. If that total is greater than 1% + 130 gallons, a tank discharge is possible.
- Precision tank test is required every 5 years.
- Method can only be used for the first 10 years of the life of the tank, or the first 10 years of the date of corrosion protection upgrade.

Release Detection Monitoring

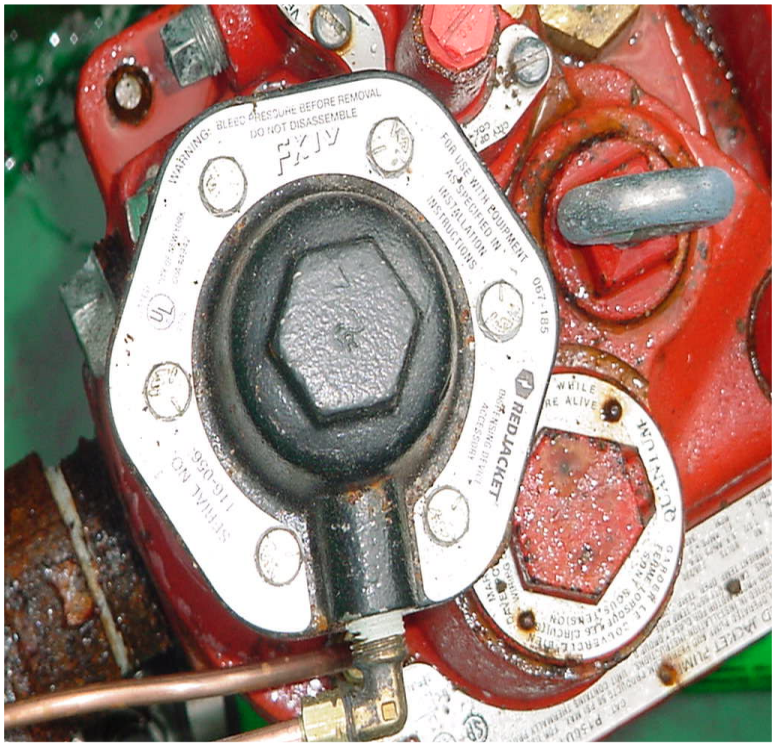
Piping

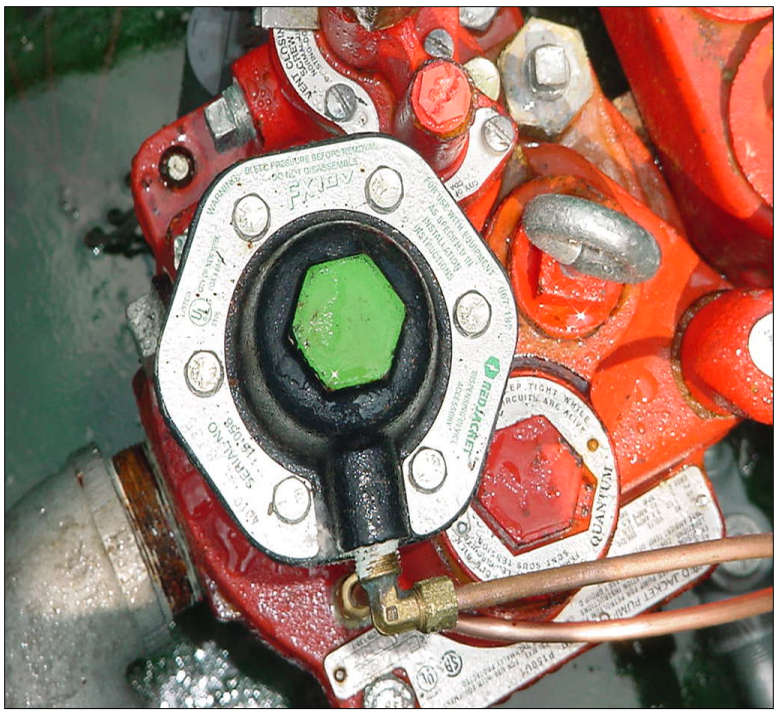
Pressurized Piping

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

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





A New LLD Issue

- The Problem: Two or more **lines** manifolded together with associated MLLDs. Two LLDs = 6gph, Three LLDs = 9gph
- LLDs must operate according to manufacturer's specifications, or 3gph.
- Contractors get each LLD to pass a test by isolating it from the rest of the system
- Here's how it looks….

New LLD Issue (cont)

In this case, the tanks are also manifolded. This is the master tank STP sump. The slave ALSO has a functioning STP with an LLD. The problem was evident when ONE car pulled up to get regular gas and **BOTH** turbines turned on. Note the check valve between the turbine and the piping, the contractors use this to isolate the LLD for testing.

New LLD Issue (cont)

These pictures show the STP switches. Notice the lights to both switches are on, indicating both STPs are running. The problem is, only ONE car was getting regular gas. Thus, it is obvious that the piping is manifolded and the LLDs are installed incorrectly, allowing each to detect only a 6gph leak or greater. The O/O has a few options to correct this problem. We'll discuss that later…

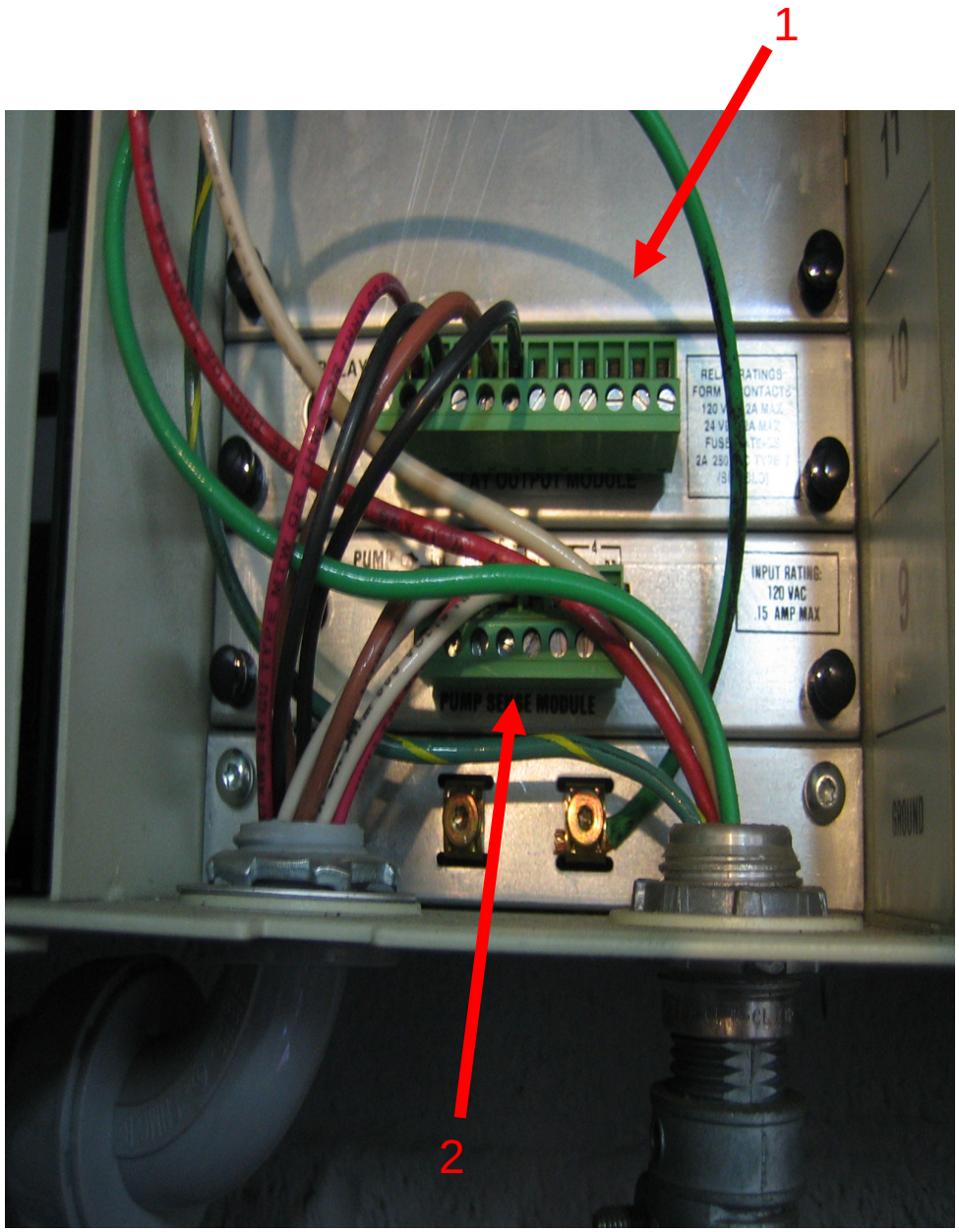
New LLD Issue (cont)

In this case, the piping ties together at the blend valve inside the dispenser. This station used to store 3 grades of gasoline, but recently switched out the mid-grade for a second regular tank. The blend valve here is blending 65% regular with 35% premium to sell mid-grade. Sure enough, all USTs have STPs with LLDs.

New LLD Issue (cont)

Believe it or not, this station is actually operating in compliance with their LLDs. The check valve is in place between the piping and the turbine, just like the earlier station, but notice in the picture on the right that only ONE regular turbine is switched on. How did they do this?

New LLD Issue (cont)



This picture was taken inside the station's Veeder Root TLS-350. (1) is the output relay module, standard in all Veeder Roots, while (2) is a "pump sense" module installed by the contractor to control the STPs and detect when a turbine is turned on. This module, along with the check valve, allows each LLD to detect at 3gph. In this case, the pump sense module detects which regular tank has more inches of product, and turns that turbine on to blend.

You do NOT need to open the Veeder Root to see if the pump sense module exists!! Simply print out the in-tank set-up, and it will appear there.

New LLD Issue (cont)

This is another facility with multiple regular tanks with STPs and LLDs. This station decided to install manual switches for their turbines rather than go the more expensive pump sense route. These switches have 3 settings, A, A&B, and B. The A&B setting leaves both turbines on, while the A, or the B setting selects one turbine. This station had considerably more product in one regular tank compared to the other, indicative of this type of practice.

New LLD Issue (cont)

Like the last station, this facility also is using manual switches to control their turbines. These are installed prior to the STP boxes to send power to one or the other turbine. Like the last station, these also have the same 3 settings: A, A&B, and B. So absent the STP boxes with the lights, how would you tell if both regulars are switching on or not? Simply pay attention in the tank field! You can either hear both turn on, or feel them turn on; your choice. (duh, or look at the setting on the switch!)

New LLD Issue (cont)

Applications

4. Multiple Pumps on Same Discharge Line

Two Pumps on Same Line – Periodically, direction is sought concerning application of leak detectors, when two pumps are used to supply the same discharge line. This becomes a matter of logic and judgment on the part of the individual designing the system, utilizing the following information.

There are basically two approaches to the situation, as follows:

1. When installing a leak detector at each pump (Figure 5A) the main considerations are:

a. Considering that two leak detectors are involved, the flow rates referred to in Position 2, Figures 1 and 2 (leak sensing position) would double, i.e.

1) The metering rate being allowed to the discharge line would double to approximately 6 gph versus 3 gph. Therefore, it would require a loss from the discharge system of this amount (approximately 6 gph versus 3 gph) or greater to prevent the leak detector from opening to Position 3 and allowing full flow. See notice below.

2) The restrictive flow rate allowed by the leak detector when in Position 1 would double to approximately 3 to 6 gpm versus 1-1/2 to 3 gpm.

b. The test time, however, would decrease for the same reason as stated in a.1) above.

c. Assuming that the leak detectors were mounted directly in Red Jacket pumps, or in 038-072 housing as close to the discharge of the pumps as possible (Figure 5), most of the discharge line would be monitored by the leak detector as the leak detector monitors the discharge line downstream from itself.

2. When installing one leak detector in the main discharge line at a point beyond where the discharge lines from each of the two pumps manifold to it (Figure 5B), main considerations are:

a. The leak detector is dependent upon the total flow rate exposed to the main discharge line. (i.e. the diaphragm & piston type models 116-017 and 116-030 will accommodate a maximum flow rate of 70 gpm. The Big-Flo model leak detector model 116-012 will accommodate a maximum flow rate of 250 gpm.)

b. With one leak detector being used, as illustrated in 5B, the leak detector would operate as described in Figures 1 and 2 with stated flow rates and time being applicable.

c. Considering that the leak detector monitors the discharge line downstream from itself, the manifold portion and any piping previous to the leak detector would not be protected by the leak detector. Figure 5B.

More than Two Pumps on Discharge Line – When applying the leak detector to a system that would utilize more than two pumps to supply the same discharge line, it is important to note that the size of the leak rate which can be detected, using a leak detector in each pump, begins to reach an unacceptable level. For example, three pumps using a leak detector in each as shown in Figure 5D will only detect a leak of approximately 9 gph or larger (3 x 3 gph = 9 gph). Also, in the event that an adequate leak rate did occur to activate the leak detector, the restricted flow rate would be 1-1/2 to 3 gpm for each leak detector and pump in service (3 x 3 = 9 gpm). It is possible that a flow rate of this size would not be recognized as a restricted flow rate or as abnormal. Each additional leak detector and pump used will increase the minimum detectable leak rate by approximately 3 gph and the restricted flow rate by 1-1/2 to 3 gpm.

Due to the above factors, we recommend the use of a Six-Inch Big-Flo Leak detector, model 116-012, installed as shown in Figure 5E, in this particular type of system.

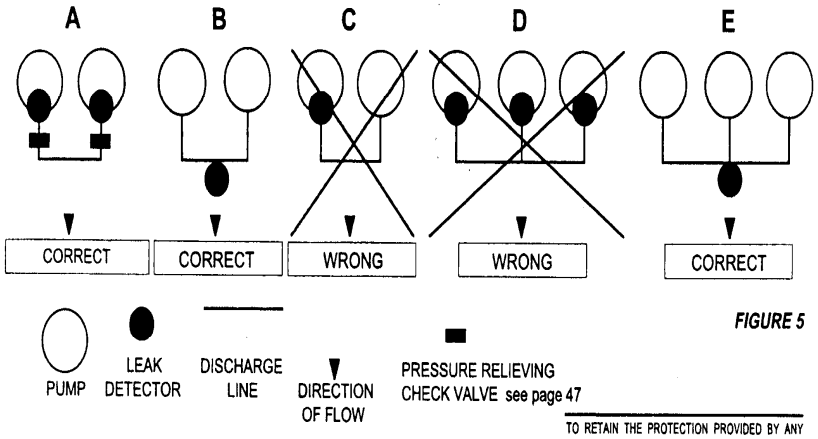


FIGURE 5

see page 47

TO RETAIN THE PROTECTION PROVIDED BY ANY SAFETY EQUIPMENT, PERIODIC EXAMINATION AND TESTING IS MANDATORY. AN ANNUAL TESTING OF RED JACKET LEAK DETECTORS IS HIGHLY RECOMMENDED. (See p. 23 for Procedure.)

This is a printout from Veeder Root. It shows both proper and improper LLD installations. The illustrations are quite self-explanatory, so use this as ammunition for any questioning contractors. "Option A" should really include some kind of pump switch (or pump sense module). There are also other options for facilities to get their LLD configuration into compliance…

New LLD Issue (cont)

Fixes

- If not already in place, install check valves between product line and turbine. Also install some kind of pump switch or pump sense module.
- Install pressure transducers (these work differently than mechanical LLDs and would not have the same problem).
- Install an LLD after the manifold point (closer to dispensers) in the lines. Depending on how many lines are manifolded and flow rate, a “Big Flo” LLD might have to be used instead.
- If tanks are manifolded, the STP on the slave tank can be taken out of service, thus using the tank for storage only.

Pump Sense Module

It has other uses…

- This module allows the ATG to control the operation of the turbines, so it obviously knows when a turbine is turned on.
- This feature is useful to have in certain areas, where some customers are purchasing very small amounts of fuel at a time. (ie. for lawn mowers, very poor areas)
- Without the pump sense module, the ATG might recognize the dispensing as a leak, since it’s such a small amount.
- Also, if a CSLD chip is installed, this module decreases the amount of idle time needed for the CSLD chip to work down to 5 minutes.

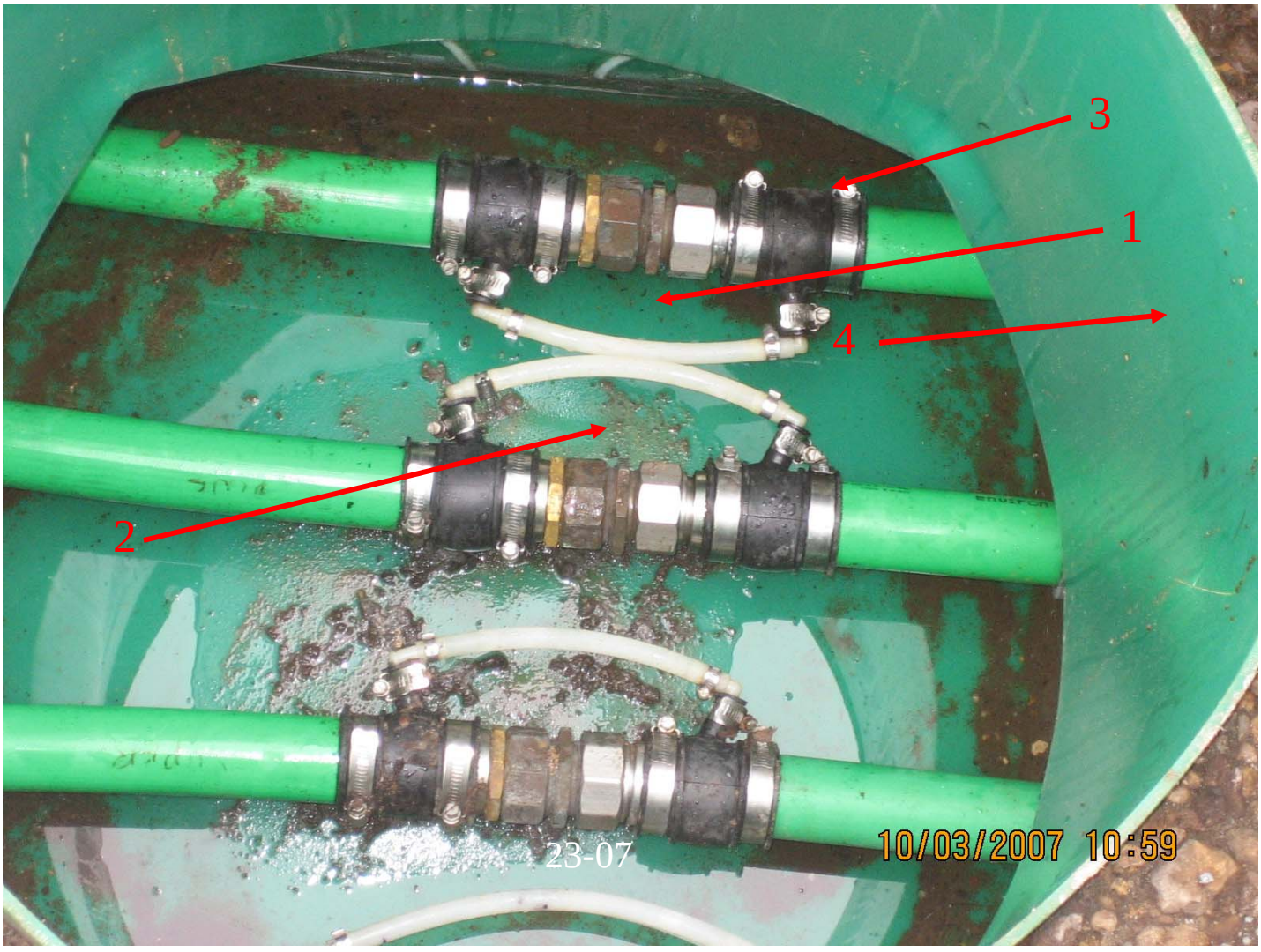
Interstitial

- 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

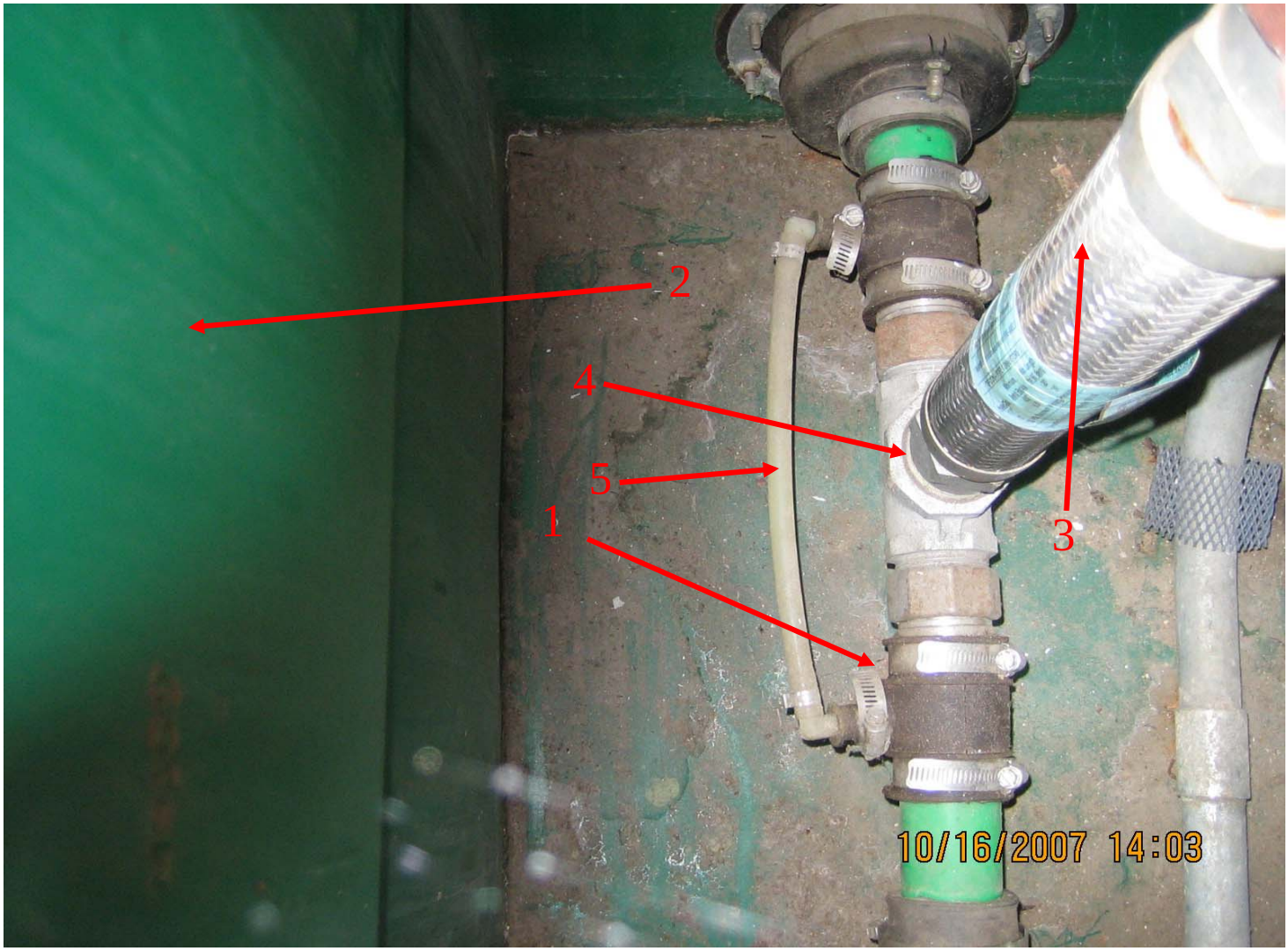
Huh?

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.



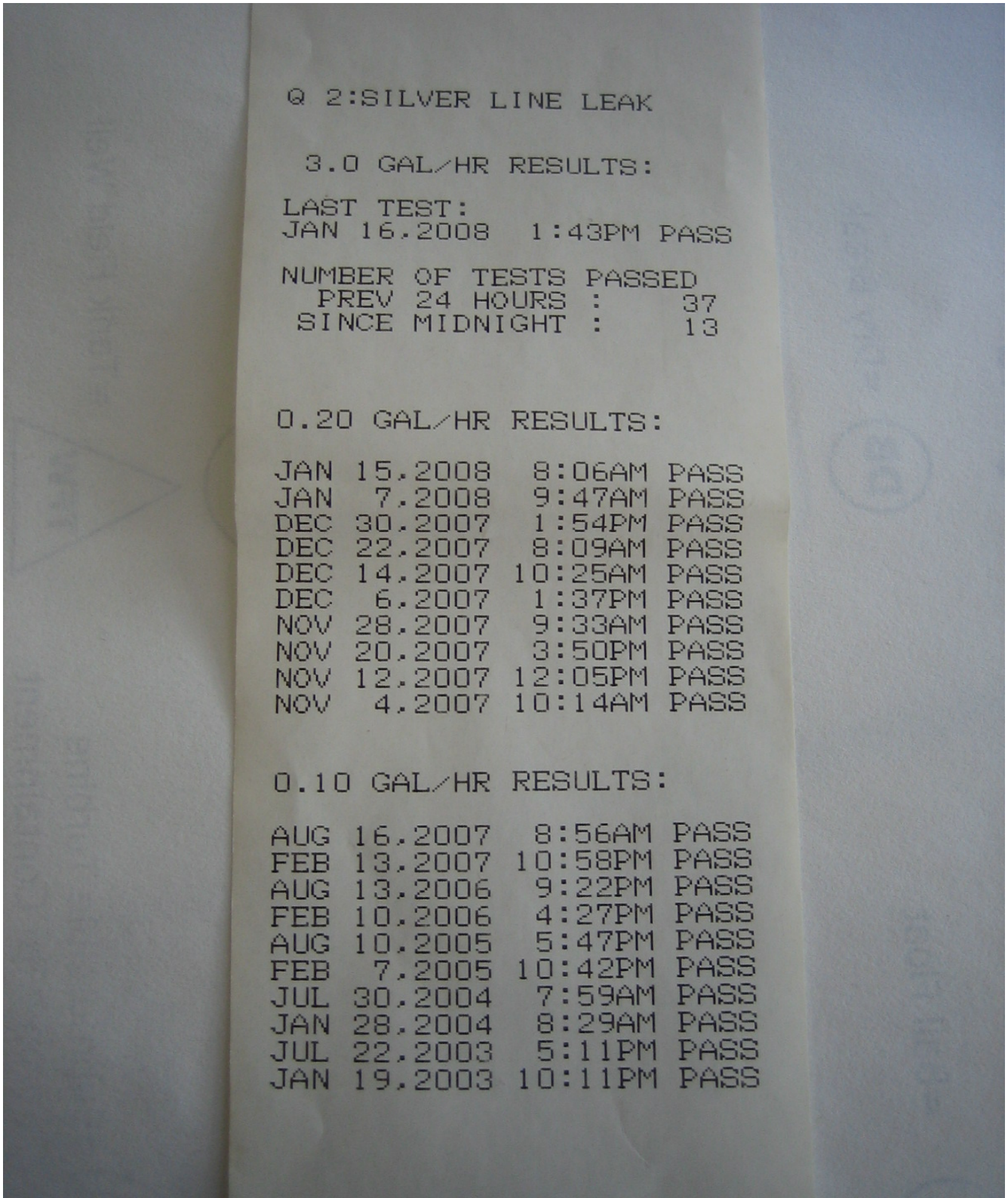
This is a picture of double wall flex piping (1) in a dispenser sump (2). The stainless steel riser (3) connects to the dispenser. Since the interstitial does not carry across the single wall metal fittings (4), jumpers (5) are required to allow monitoring of the interstitial space of the entire piping 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

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

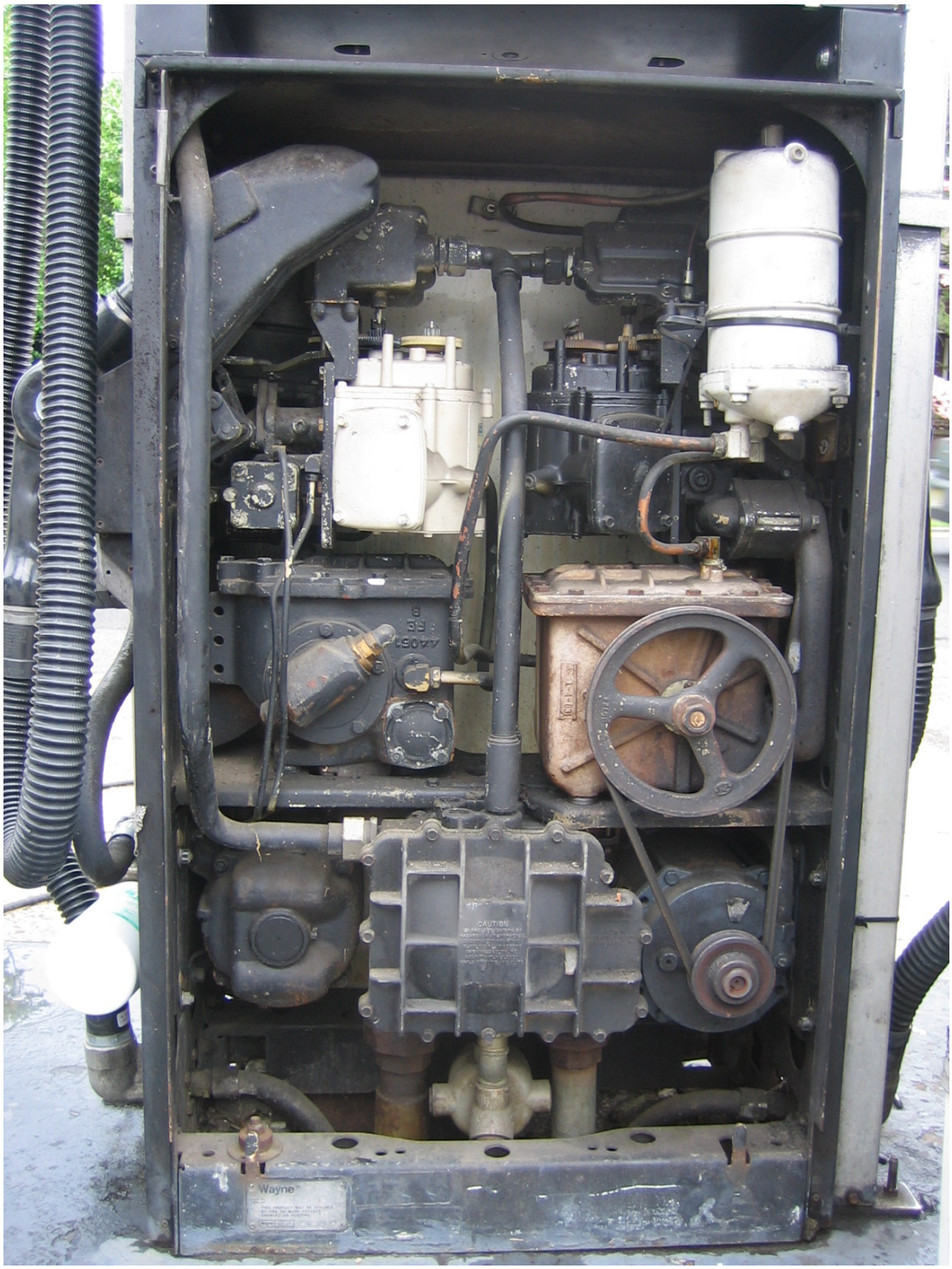
0.20 GAL/HR RESULTS:

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

CORROSION PROTECTION


ENGINEERED
ti-P3
N PROTECTION


stR
TWIN
TANK


ON
OFF
ALARM ADJUST
OUTPUT ADJUST
50MV 10A SHUNT
VOLTMETER
1 2
I+I ANODE
REFERENCE ELECTRODE
REF. NEG.
AMMETER
1 2
I−I STRUCTURE


0
20
40
60
80
100
DC VOLTS


0
2
4
6
8
10
DC AMPERES


CP


CP TEST STATION


40530P
Diesel
PRODUCT
HI
OCTANE
PRODUCT
LO
OCTANE
PRODUCT


.001


.406


03/05/2008


03/05/2008

SPILL PREVENTION

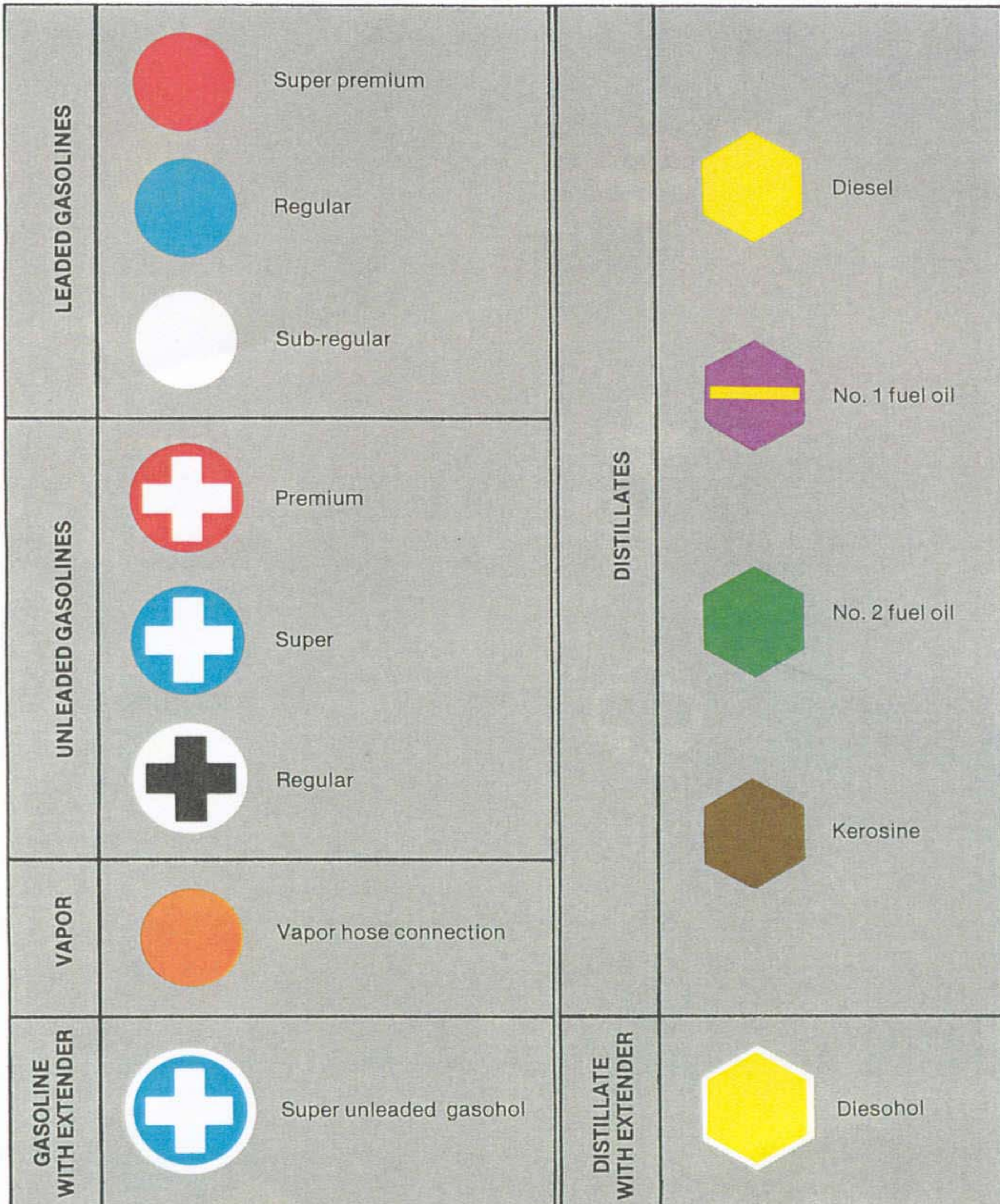
Per N.J.A.C. 7:14B-5.1(d), the owner and/or operator of an UST system is required to:

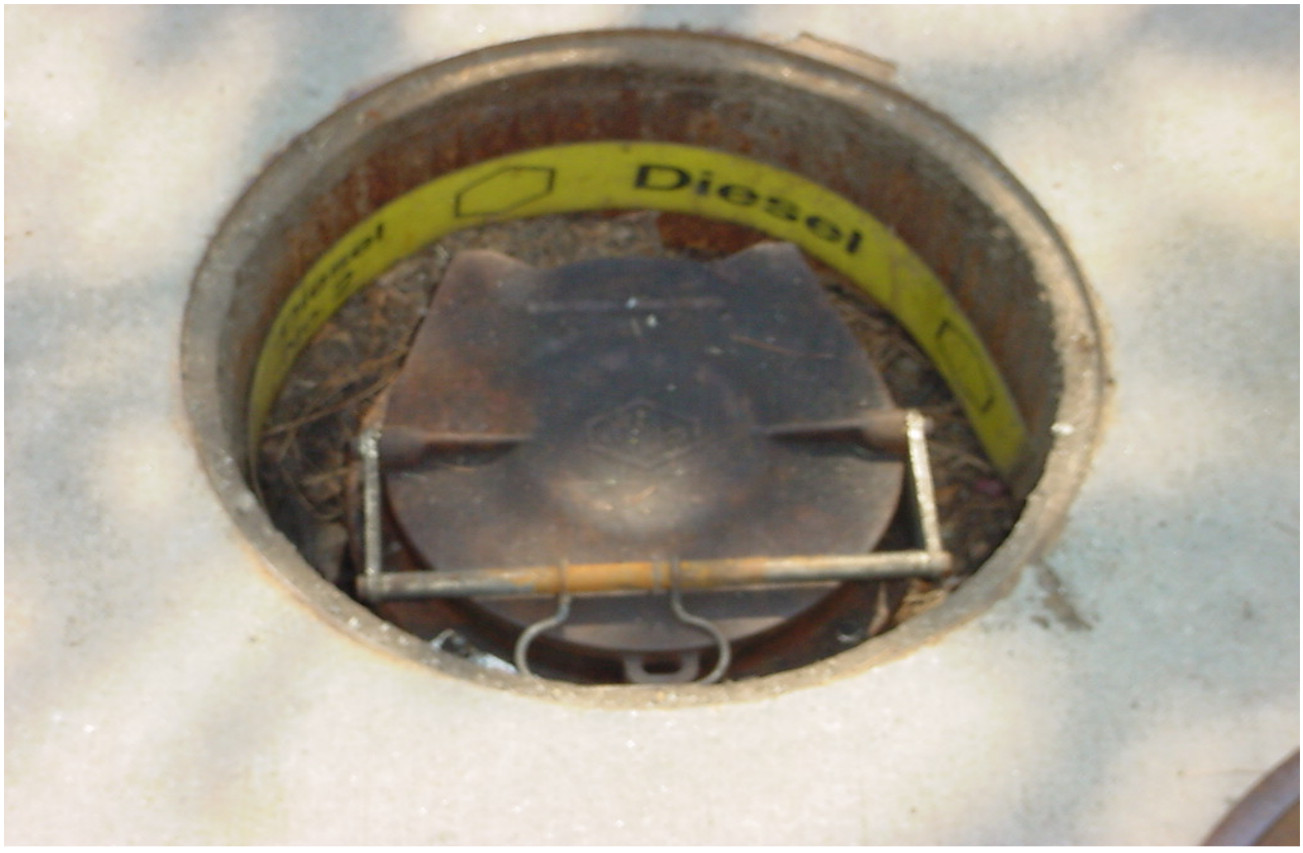
- Keep spill catchment basins, dispenser sumps and piping sumps clean of product, water, and debris.

- Visually inspect spill catchment basins before every delivery and visually inspect spill catchment basins, dispenser sumps and piping sumps once every 30 days, and properly dispose of any accumulation of debris and liquid collected.

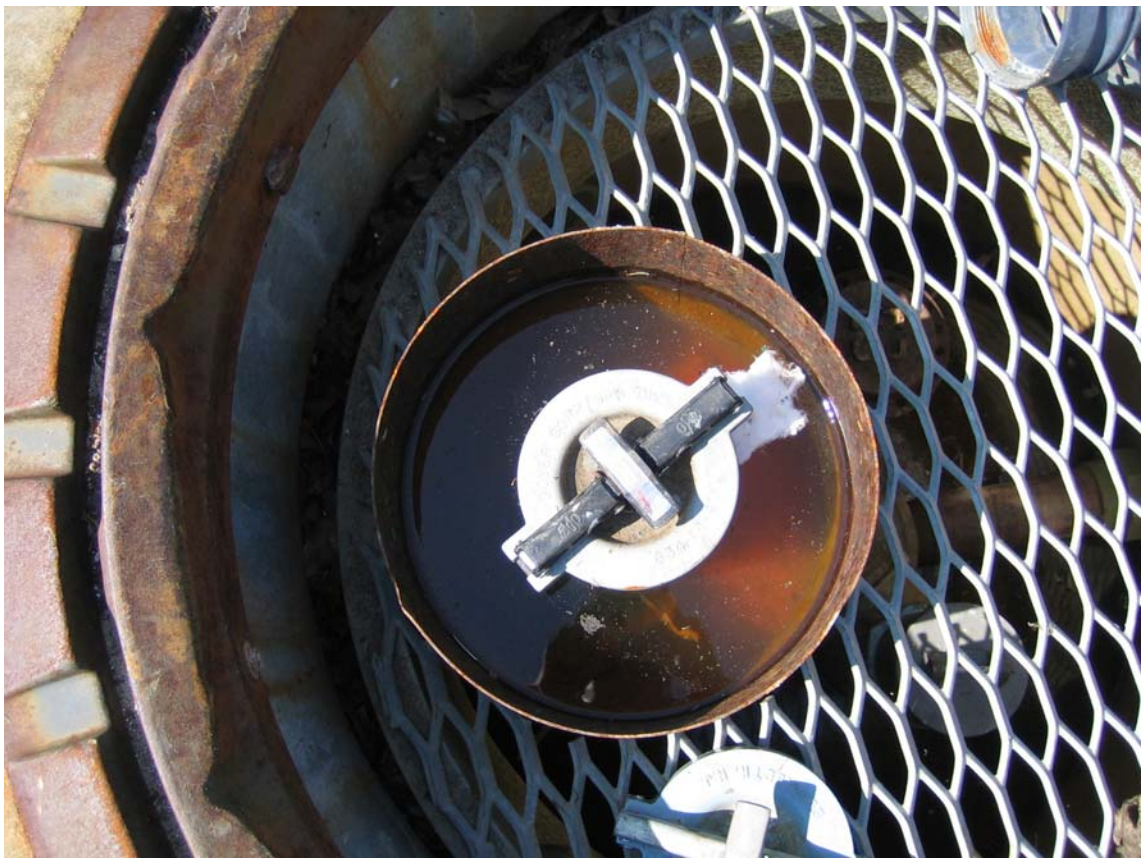
- Ensure deficient equipment is repaired or replaced. Repairs and installation of new equipment shall be in compliance with N.J.A.C. 7:14B-4.1(a)3i, 4.1(n), 4.2(d), and 5.4.

- Not accept product delivery to any tank if the spill catchment basin contains product, water or debris.


LEADED GASOLINES
Super premium
Regular
Sub-regular
UNLEADED GASOLINES
Premium
Super
Regular
VAPOR
Vapor hose connection
GASOLINE WITH EXTENDER
Super unleaded gasohol
DISTILLATES
Diesel
No. 1 fuel oil
No. 2 fuel oil
Kerosine
DISTILLATE WITH EXTENDER
Diesohol

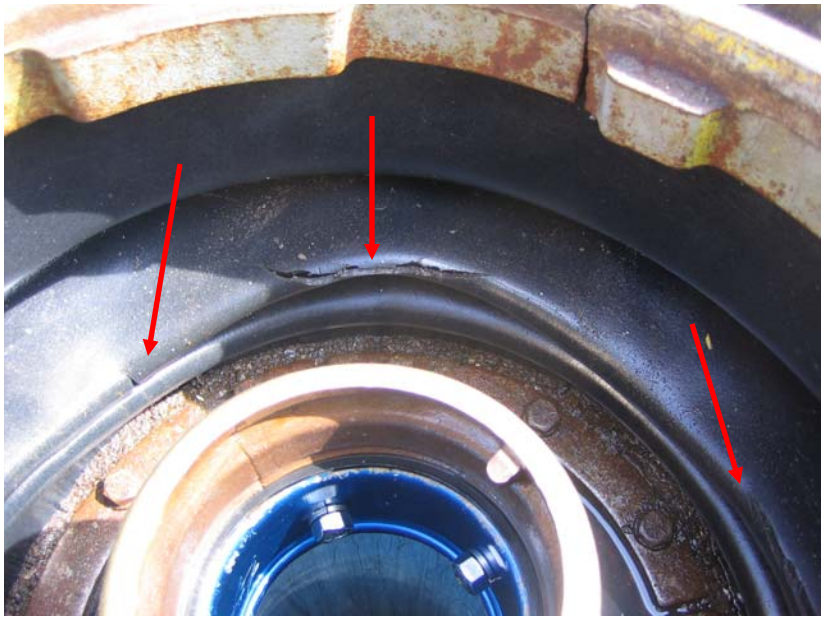

Diesel

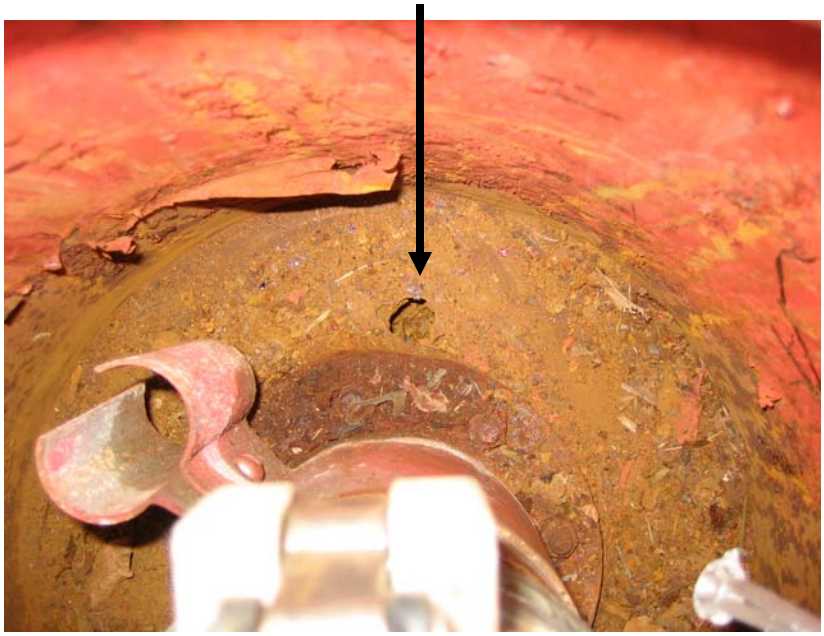

MID



WHAT TO LOOK FOR:

- Warping or bulging in the sides/bottom of the spill bucket.
- Cracks or splits.
- Excessive rust/flaking.
- Looseness of fittings and/or the spill bucket itself.
- Damage to the top ring of the spill bucket.
- Obvious exposure/deterioration due to the elements.
- Presence of sealant/gooch in the spill bucket.





*WHEN IN DOUBT, REQUIRE AN INTEGRITY TEST TO BE PERFORMED

=

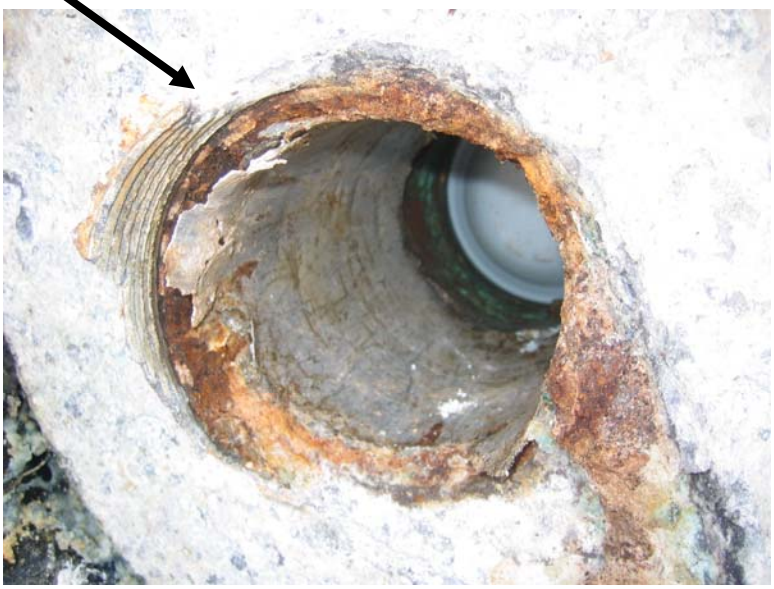

WOOHOO!!!

=


D'OH!

WHAT YOU DON'T WANT TO SEE

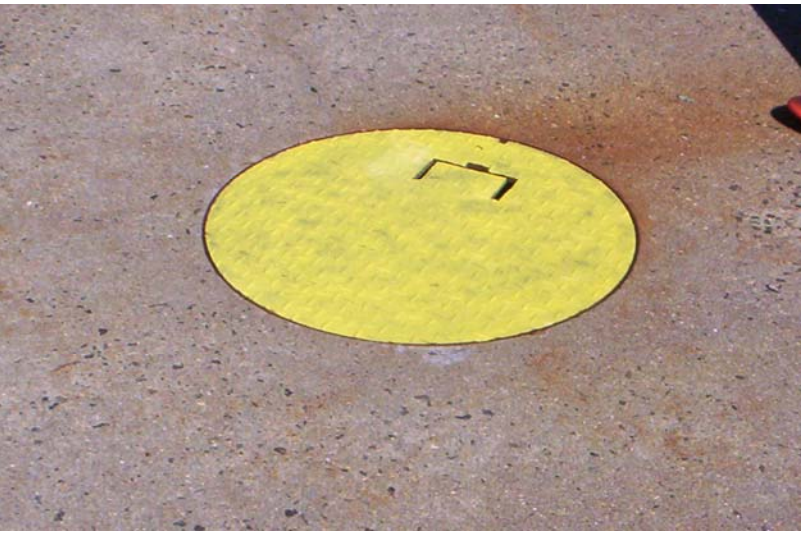
Prolonged exposure to road salt led to severe corrosion of this spill bucket. Notice that the threaded connector has almost entirely corroded away.



MORE OF WHAT YOU DON'T WANT TO SEE

DOES THIS MEET 12/98 REQUIREMENTS?

OVERKILL?



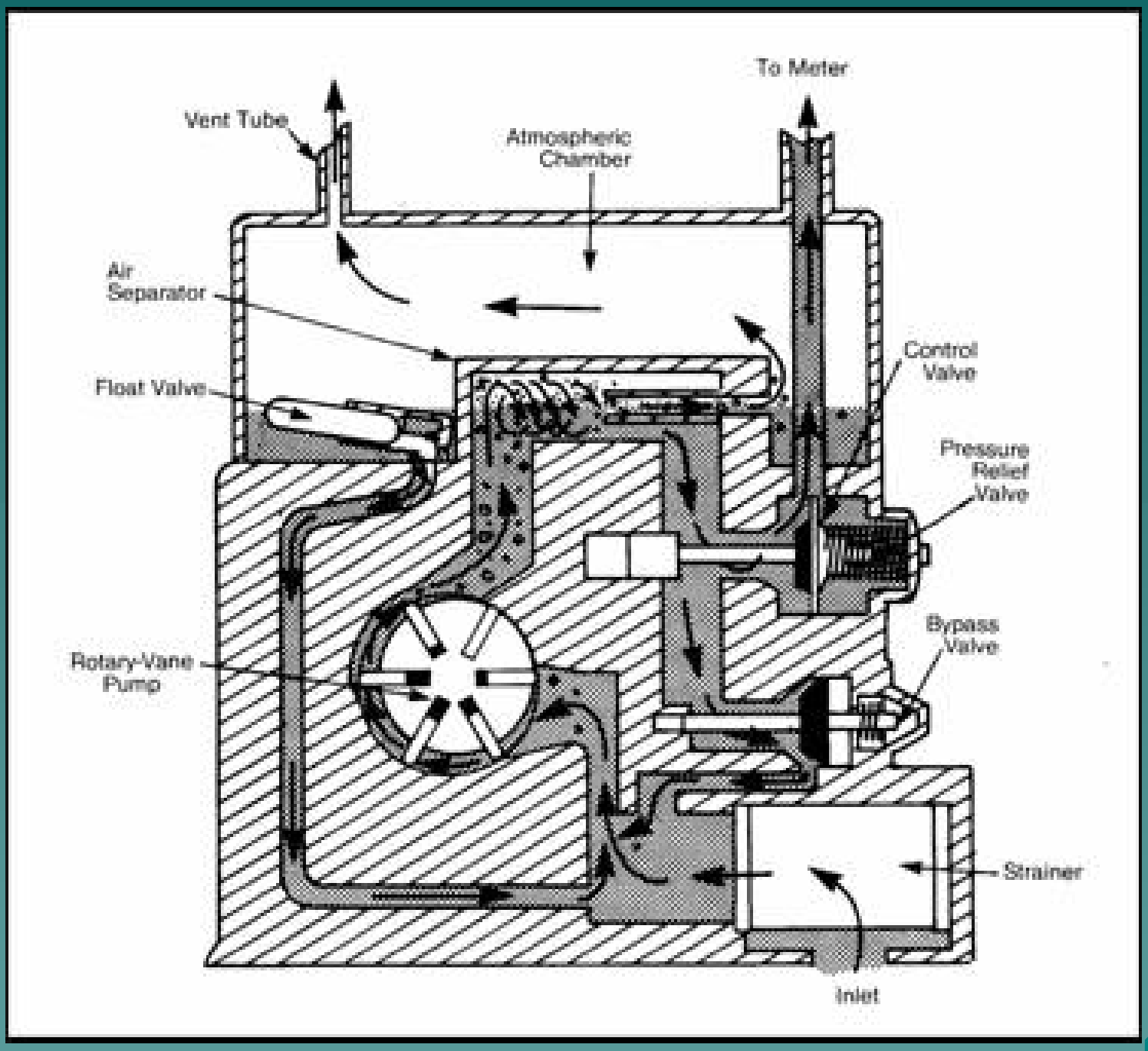
INCON STS System

Franklin Fuel

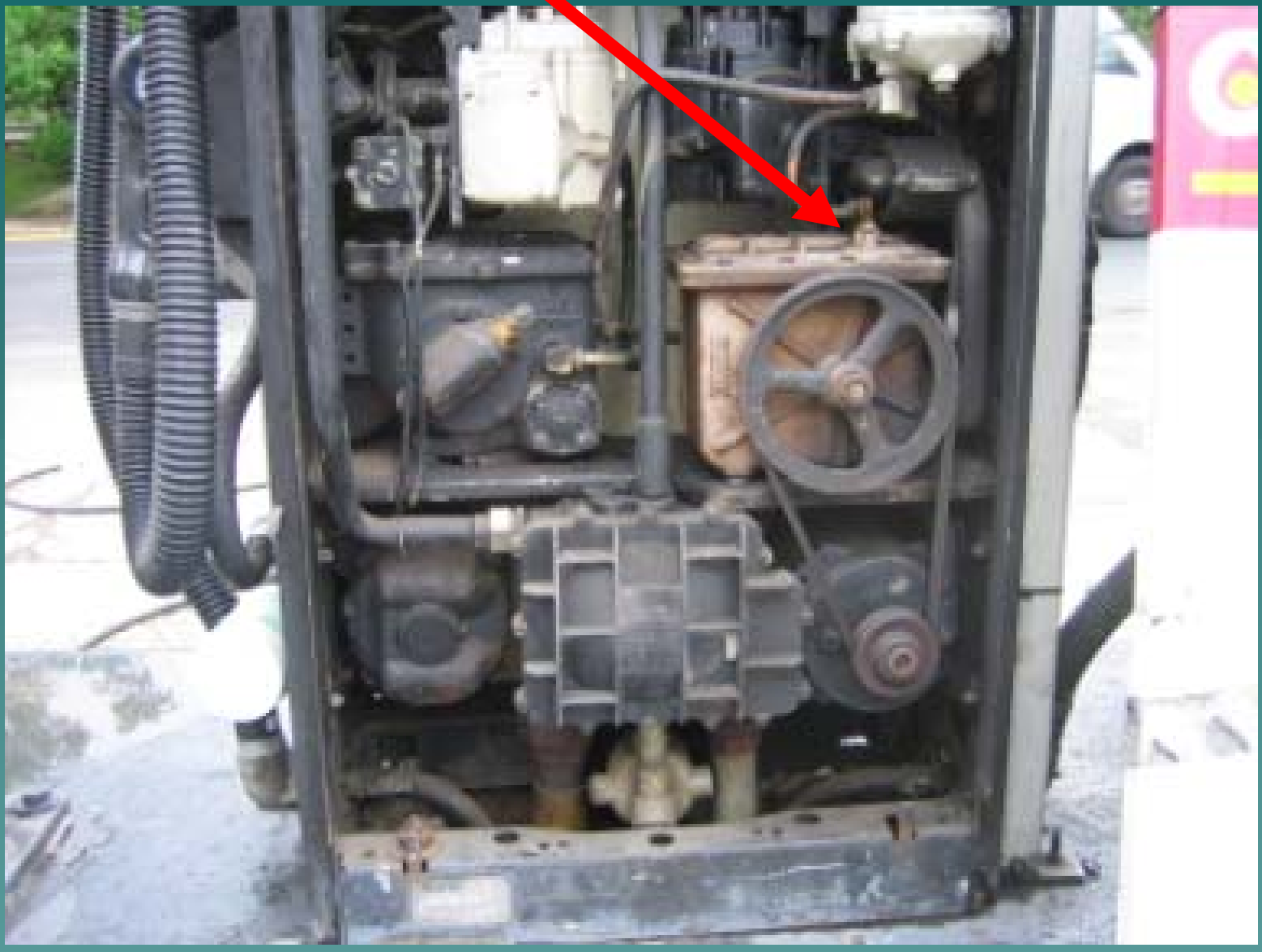
Sherlock Test System

***This is a vac test, and does not require liquid.**

OVERFILL PROTECTION


To Meter
Vent Tube
Atmospheric Chamber
Air Separator
Float Valve
Control Valve
Pressure Relief Valve
Bypass Valve
Rotary-Vane Pump
Strainer
Inlet

AIR ELIMINATOR VENT




WARNING
HOSE JUMP INDICATES FULL TANK
SHUT OFF TRUCK VALVE

CO-AXIAL STAGE I

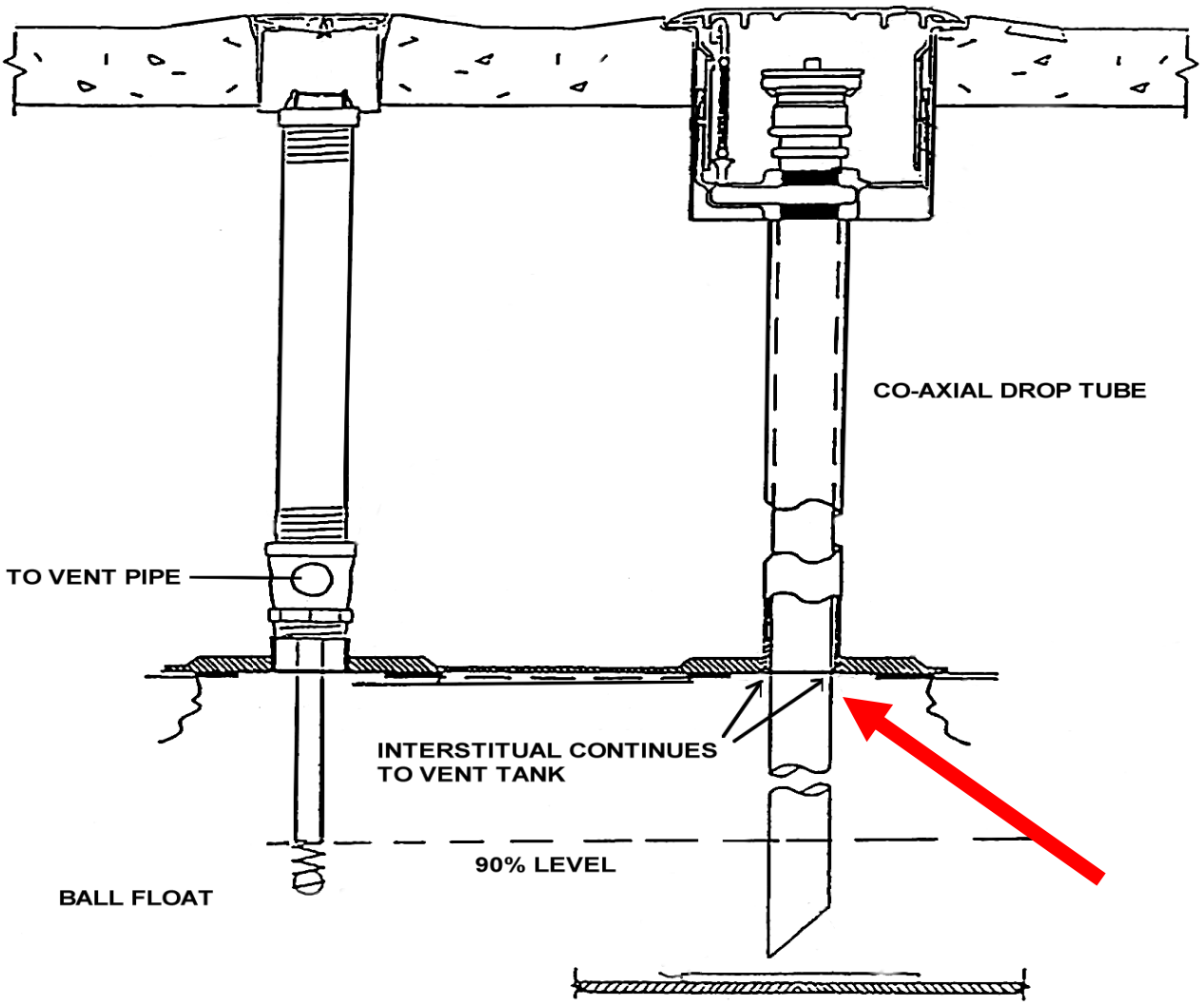


FIGURE 1


TAUR


1203


VAPOR
07/20/2005 14:46


I'M SURE YOU'RE PROBABLY WHO YOU SAY YOU ARE, BUT REGULATIONS REQUIRE ME TO SNIFF YOUR BUTT.
SECURITY
EPA
CALLAHAN