NEIWPCC
UST Inspector Training Webinar

UST Manifolds
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Manifolds
Overview

• Definitions/Terms
  – Tanks
  – Lines
  – Siphon Bars/Actuators
• Dispenser Piping manifolds
• Vent lines
• Identification Process/What to look for?
Definitions

• Webster's - Definition of MANIFOLD
  – Consisting of or operating many of one kind combined
  – A manifold is a wide and/or bigger pipe, or channel, into which smaller pipes or channels lead.
What is a Manifold?
Manifolded Tanks

- A piping connection between two tanks that allows fuel to freely flow from one tank to another. A tank manifold allows one submersible pump to draw product from two or more tanks, thus increasing the storage capacity for that product.
Manifolded Tanks

Why?
Manifolded Tanks

- Provides for larger storage capacity and reduces the number of deliveries needed to keep the location in operation.
Manifolded Tanks

What they look like?
As an option for trouble shooting and maintenance, install a ball valve downstream of the check valve.

**NOTICE**

The drawing shown here is to illustrate the requirement for in-line, pressure relief type check valves. It is not a recommended guide for installation of piping downstream of the check valves.

Figure 2

10
Drone Tank
Drone Tank

- Drone tank – A tank that has only a siphon bar connecting it to another tank for product piping.
Siphon Bar
What to look for?
What to look for?

- Open all lids in tank field
- Determine # of tanks
- Determine # of STP’s
- Are they equal?
- Is there a siphon bar?
- Is there a piping sump?
- Open dispenser cabinets
- How many grades of fuel are being sold?
Other things to look at!

• Print out an inventory off the monitoring system.
• Pressing the print button on a Veeder root will give you an inventory.
• Look at Tank label names
  – Sometimes the name will ID the master and drone tank.
<table>
<thead>
<tr>
<th>Tank</th>
<th>Type</th>
<th>Volume</th>
<th>Ullage</th>
<th>90% Ullage</th>
<th>TC Volume</th>
<th>Height</th>
<th>Water Vol</th>
<th>Water</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>T 1</td>
<td>SUPER</td>
<td>1104 GALS</td>
<td>8760 GALS</td>
<td>7773 GALS</td>
<td>1094 GALS</td>
<td>15.19 INCHES</td>
<td>0 GALS</td>
<td>0.00 INCHES</td>
<td>72.5 DEG F</td>
</tr>
<tr>
<td>T 2</td>
<td>PLUS</td>
<td>766 GALS</td>
<td>8918 GALS</td>
<td>7949 GALS</td>
<td>758 GALS</td>
<td>11.61 INCHES</td>
<td>0 GALS</td>
<td>0.00 INCHES</td>
<td>72.8 DEG F</td>
</tr>
<tr>
<td>T 3</td>
<td>REG W STP</td>
<td>1558 GALS</td>
<td>8126 GALS</td>
<td>7157 GALS</td>
<td>1543 GALS</td>
<td>19.34 INCHES</td>
<td>0 GALS</td>
<td>0.00 INCHES</td>
<td>73.9 DEG F</td>
</tr>
<tr>
<td>T 4</td>
<td>REG WO STP</td>
<td>1710 GALS</td>
<td>7974 GALS</td>
<td>7005 GALS</td>
<td>1694 GALS</td>
<td>20.70 INCHES</td>
<td>0 GALS</td>
<td>0.00 INCHES</td>
<td>72.9 DEG F</td>
</tr>
</tbody>
</table>

**Manifolded Tanks**

<table>
<thead>
<tr>
<th>Inventory Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>T 3: REG W STP</td>
</tr>
<tr>
<td>T 4: REG WO STP</td>
</tr>
<tr>
<td><strong>Volume</strong></td>
</tr>
<tr>
<td><strong>TC Volume</strong></td>
</tr>
</tbody>
</table>

* * * END * * *
Still not sure

- Keep looking down the list
  - Tank that are Manifolded will then be listed.
  - May also give you the combined volume of both tanks

May also tell you which UST has an STP
Need more info

• CSLD Test results
  – Should list the tanks that are manifolded and therefore you will see one .2 gph test result.
  – (hopefully passing)
CSDL TEST RESULTS

T 1: SUPER
PROBE SERIAL NUM 249158

0.2 GAL/HR TEST
PER: OCT 5, 2017 PASS

T 2: PLUS
PROBE SERIAL NUM 249160

0.2 GAL/HR TEST
PER: OCT 5, 2017 PASS

T 3: REGULAR W STP
PROBE SERIAL NUM 249161
T 4: REGULAR WO STP
PROBE SERIAL NUM 249159

0.2 GAL/HR TEST
PER: OCT 5, 2017 PASS

* * * * * END * * * * *
Need more info?

• Print out the in-tank set up
• Look down the list of information for each tank.
• Siphon Manifolded Tanks
IN-TANK SETUP

PRODUCT CODE : 3
THERMAL COEFF : 0.000700
TANK DIAMETER : 92.00
TANK PROFILE : 4 PTS
   FULL VOL : 9684
   69.0 INCH VOL : 8079
   46.0 INCH VOL : 5061
   23.0 INCH VOL : 1973

FLOAT SIZE:  4.0 IN.
WATER WARNING : 2.0
HIGH WATER LIMIT: 3.0

MAX OR LABEL VOL: 9684
OVERFILL LIMIT : 90%
HIGH PRODUCT : 95%
DELIVERY LIMIT : 15%

LOW PRODUCT : 550
LEAK ALARM LIMIT: 25
SUDDEN LOSS LIMIT: 99
TANK TILT : 0.00
PROBE OFFSET : 0.00

SIPHON MANIFOLDED TANKS
T#: 04
LINE MANIFOLDED TANKS
T#: NONE

LEAK MIN PERIODIC: 25%
                   : 2421
LEAK MIN ANNUAL : 25%
                  : 2421
What about the tank field?

- Open all sump covers and look to see if what you see in the tank field matches the monitoring system print outs.
Functional Element

- **Check valve** – (contains functional element adjusting screw to isolate line) – The functional element guides the stem of the check valve which can be tightened down with an adjusting screw to assist in pressure testing the lines.

- **Pressure relief** – allows expansion relief and also relieves full pump pressure when the pump is shut off.

- **Vacuum Source** – Creates a siphon (siphon bar for manifold tanks).

- **Air Eliminator** – provides a high point in the pump where air can be collected and discharged back to the tank.
Vapor Recovery Lines

Three vent lines manifolded into one.

Three unmanifolded vent lines with three P/V Valves.