

Tank Delivery Adjustment

When an ORVR compatible Phase II vapor recovery system is installed and operating correctly, the storage tank ullage space will generally be below atmospheric (negative pressure) due to the shortfall created when refueling ORVR vehicles. Before deliveries to the underground storage tank (UST), a driver may “stick” (manually measure product level in the UST through the drop tube) to verify the delivery. Because of the varying UST ullage space pressures associated with ORVR refueling, the level measured at the product drop tube with a stick and the measurement at the automatic tank gauge (ATG) via a probe may differ noticeably. In a typical scenario, where the tank is under a vacuum (negative pressure), the stick reading in the drop tube will be less than that of the ATG probe. There are many ways to offset the variance between the stick reading at the drop tube and the ATG reading; this bulletin offers a few ideas.

First idea would be to always rely on the ATG reading for the current tank level readings. Note: This would be the recommended method, although we recognize that it is not always possible for the driver to access the ATG for these readings.

Second idea would be to use the ISD pressure sensor reading from the ATG and offset the stick reading accordingly. Note: If this method is used, keep in mind that the UST ullage pressure could be outside the range of the ISD pressure sensor, the Veeder-Root ISD pressure sensor range is +5” WC to -5” WC and the INCON ISD pressure sensor range is +8” WC to -8” WC (water column).

The third idea would be to attach a **-10” – 0” – +10” WC** gauge (refer to Figure 2) at the Phase I vapor adaptor to measure the system pressure, ie. this gauge could snap into the tank truck vapor elbow to read UST ullage pressure. Note: It is not recommended that the gauge be permanently mounted in the UST ullage space as this could leave it vulnerable to damage and leakage.

NOTE: The ideas offered in this bulletin are for your reference only. Always refer to the CARB, AQMD, or other applicable regulations when installing, servicing, or testing any Phase I or Phase II vapor recovery system.



If utilizing the second or third ideas noted on page one, the UST ullage space pressure reading in inches of water column would need to be translated to inches of gasoline column and then added or subtracted from the stick reading at the drop tube. 1.0" WC of positive or negative pressure corresponds to approximately 1.35 inches of gasoline. In the table below, Figure 1, UST ullage space readings can be quickly translated for addition or subtraction to the product stick reading and reference to the estimated ATG probe level readings.

Reading in Inches W.C.	Offset in Inches of Gasoline	Offset Action to Stick Reading
-9.5" WC	12 ¾ "	Add
-9.0" WC	12 ¼ "	Add
-8.5" WC	11 ½ "	Add
-8.0" WC	10 ¾ "	Add
-7.5" WC	10 ¼ "	Add
-7.0" WC	9 ½ "	Add
-6.5" WC	8 ¾ "	Add
-6.0" WC	8 "	Add
-5.5" WC	7 ½ "	Add
-5.0" WC	6 ¾ "	Add
-4.5" WC	6 "	Add
-4.0" WC	5 ½ "	Add
-3.5" WC	4 ¾ "	Add
-3.0" WC	4 "	Add
-2.5" WC	3 ½ "	Add
-2.0" WC	2 ¾ "	Add
-1.5" WC	2 "	Add
-1.0" WC	1 ¼ "	Add
-0.5" WC	¾ "	Add
0.0" WC	0"	No Action
+0.5" WC	¾ "	Subtract
+1.0" WC	1 ¼ "	Subtract
+1.5" WC	2 "	Subtract
+2.0" WC	2 ¾ "	Subtract
+2.5" WC	3 ½ "	Subtract
+3.0" WC	4 "	Subtract

Figure 1

Example: If the stick reading at the drop tube is 50" of product and the UST ullage pressure is -6" WC, the offset would be +8" or an estimated 58" gasoline level reading expected on the ATG.

Please feel free to contact FFS Technical Service at 800-984-6266 with any questions.

Sincerely,



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Figure 2

NOTE: The gauge can read negative pressure left to right depending on port configuration. Refer to the gauge manufacturer's instructions for further details.