

# - DRAFT -

## ISD IN-USE EVALUATION PROTOCOL

December 16, 2005

### 1. Objectives

The overall objective is to determine whether performance of working ISD systems is similar to performance of the system tested in certification. As discussed in a March 1, 2005, meeting between CAPCOA and ARB, the evaluation will focus on the following:

- Vapor to Liquid (V/L) testing per Exhibit 5 of Executive Order VR-202-A to determine how closely the Veeder-Root ISD system compares to the V/L method.
- Determine if the Healy ISD System effectively identifies ORVR and non-ORVR vehicles such that V/Ls can be adequately identified per CP-201 criteria.
- Determine whether V/L Malfunction Criteria for Gross and Degradation failures (Section 10.2 (b) and (c) of CP-201) can be tightened without compromising the reliability of the assessment.
- Verification that the Veeder-Root ISD vapor pressure sensor and the vapor flow meter are operating properly.

### 2. Site Selection

Certification and Research and Development sites will be excluded from being an evaluation site. The minimum number of stations is six at the following districts with one site preferably having a throughput greater than 500,000 gallons per month:

- South Coast (minimum of 1 site)
- San Joaquin (minimum of 1 site)
- San Luis Obispo
- San Diego (minimum of 1 site)
- Glenn County
- Sacramento (minimum of 1 site)
- Bay Area (minimum of 1 site)

### 3. ISD Evaluation

CAPCOA and Air Resources Board (ARB) staff will work cooperatively during the time period between the ISD installation at the first site and the fifth site to evaluate the protocol and to collect data. Any changing or refining of the protocol will be done during this time jointly with ARB and CAPCOA. The evaluation will start when the sixth site becomes operational with at least five of those

## - DRAFT -

sites in the designated Districts or 12 months after the first evaluation site is installed, whichever comes first.

The study will be a collaborative effort between the ARB and CAPCOA. The field testing will be conducted by the Districts. Access to data will be obtained remotely and in cooperation with Veeder-Root.

#### **4. Enforcement at the Evaluation Test Sites**

Enforcement will be handled in accordance to local District policies and procedures.

#### **5. Exhibit 5 of Executive Order VR-202 Testing – V/L Ratio**

District staff should notify Vince Bunac of ARB, prior to performing a site visit to facilitate matching the field data with the electronic data. The TLS system data will be provided by Veeder-Root or remotely accessed by ARB and the districts. Upon arriving at a test site, testing staff should synchronize timepieces with the ISD system clock to ensure proper correlation of test data to ISD data.

ISD vapor collection accuracy is dependent upon vapor flow meter accuracy. Since there is a single flow meter in each dispenser, all hose vapor flows make use of the same flow sensor within a dispenser. Therefore it is only necessary to test V/L accuracy on one side of the dispenser. During each V/L test the opposite side of the dispenser must be inactive by coning off the fueling point to prevent dispensing during the test.

Throughout the evaluation period, testing will be performed monthly for 18 months in accordance with Exhibit 5 of Executive Order VR-202. On each site visit, testing staff will randomly select the gasoline grade. Staff will perform at least 10 test runs during each site visit. If possible, Staff will conduct each test run at a different fueling point. Repeating test runs at the same fueling point may be necessary due to lack of available fueling points or other site-specific conditions.

Wait at least 1 minute after each test before beginning the next test to ensure that the ISD system recognizes it as a separate fueling. For each run, obtain an ISD fueling event V/L ratio by recording required information from the ISD system in the Healy V/L Field Data Sheet (Form 1).

ARB staff will compare the V/L results from the Healy V/L Field Data Sheet to the ISD system TLS V/L. Within two days after completing the V/L tests, fax the raw data sheets to Vince Bunac of the ARB at (916) 322-2444. ARB staff will compile the data from all testing agencies and forward the consolidated data to participants every three months.

**Please note that pouring the gasoline back into the UST can result in pressure changes. These changes may cause the TLS system to indicate a warning.**

# - DRAFT -

## 6. Identification of ORVR and non-ORVR vehicles

Vince Bunac of ARB at (916) 327-7420 should be contacted prior to performing a site visit to facilitate matching the field data with the electronic data. The TLS system data will be provided by Veeder-Root or remotely accessed by the ARB staff. Upon arriving at a test site, testing staff should synchronize timepieces with the ISD system clock to ensure proper correlation of test data to ISD data.

Each test site will be visited at monthly intervals for 18 months to determine the ISD system response to ORVR vehicles. Testing staff will witness a minimum of 20 refuelings per visit. Vehicle information shall be recorded on the ORVR Vehicle Determination Data Sheet (Form 2). At the end of the 18 months, the information recorded on the ORVR Determination Data Sheet must include information on a minimum of 100 ORVR vehicles and 100 non-ORVR vehicles. If the minimum number of ORVR vehicle and non-ORVR vehicle quotas are not met, testing staff will continue to visit the test site and record refueling information until they are met.

During vehicle refueling, the opposite side of the dispenser must be inactive by coning off the fueling point well enough to prevent dispensing during the test. Vehicle fuelings that are three gallons or less will not be counted.

Testing staff will determine if the vehicle is equipped with onboard refueling vapor recovery (ORVR) with the permission of the vehicle owner. If the owner refuses to provide permission, check the next vehicle. This determination is made by checking the emission label attached to the vehicle's hood or engine compartment. Look for the "Evap Family" code. If the fifth digit is an "E" or "V", it is Non-ORVR as shown in Sample A below. If the fifth digit is an "R", then the vehicle has ORVR as shown in Sample B below.

### Sample A

<i>Ford Motor Company</i>		<b>VEHICLE EMISSION CONTROL INFORMATION</b>	
This vehicle conforms to U.S. EPA regulations applicable to gasoline fueled 2003 model year new Interim Non-Tier II bin 10 light-duty trucks. This vehicle conforms to federal regulations and is certified for sale in California. ULEV qualified in California. OBD II certified. SFTP certified – Federal. CFF certified. 2TWC(2)/2HO2S(2)/EGR/SFI			
<b>Attention:</b> Dynamometer Operator – Dyno Restrictions may apply. Vehicle may have: AWD, ABS, Traction Control			
<b>Adjustments:</b> Spark Plug Gap: .052-.056		No other adjustments needed.	
4.6L - Group: 3FMXT05.4RFC Evap: 3FMXE0155BAF		 VP4DG46GD	
3W7E-9C48 K F U	<b>CATALYST</b>		

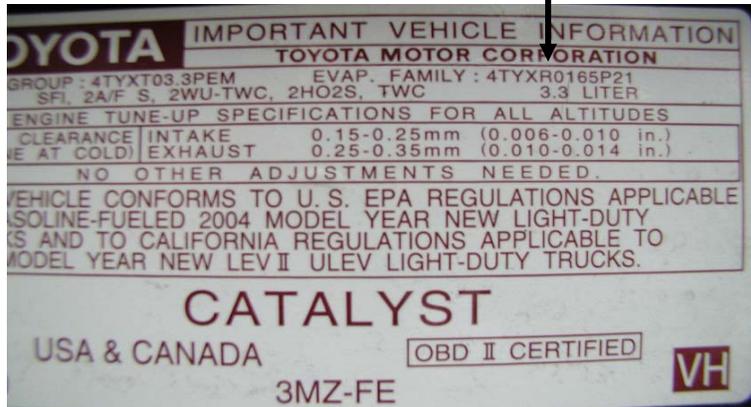
↑

Non-ORVR

# - DRAFT -

Sample B

ORVR



Staff must check the emissions label for all vehicles that fall under the EVAP Family Code Required column. Data from vehicles that fall into the EVAP Family Code Required column identified below in Table 1 that are not confirmed will not be counted. It is essential that ORVR and non-ORVR vehicles be identified conclusively.

**Table 1: EVAP Family Code Requirements**

Vehicle Class	non-ORVR Vehicles EVAP Family Code not Required	EVAP Family Code Required	ORVR Vehicles EVAP Family Code not Required
Passenger	< 1996	1997, 1998, 1999	> 2000
LD Trucks & MDV (<6000 lbs)	< 2000	2001, 2002	> 2003
MD Vehicles (6001-8500 lbs)	< 2003	2004, 2005	> 2006

After recording 30 vehicle fuelings for vehicles conclusively determined to be ORVR-equipped or non-ORVR-equipped, testing staff will forward the resulting data to ARB where ARB staff will match the beginning fueling time and the gallons dispensed data from the ORVR Vehicle Determination Data Sheet to the corresponding readings from the Veeder-Root TLS. Within two days of the field test, fax the raw data sheet to Vince Bunac of the ARB staff at (916) 322-2444. ARB will staff will compile data from all test sites and forward the compiled data to participants every three months.

## 7. Pressure Sensor Verification

Testing staff shall conduct UST pressure sensor verification testing once monthly, for 18 consecutive months, minimum. Vince Bunac of the ARB staff should be contacted at (916) 327-7420 prior to

## - DRAFT -

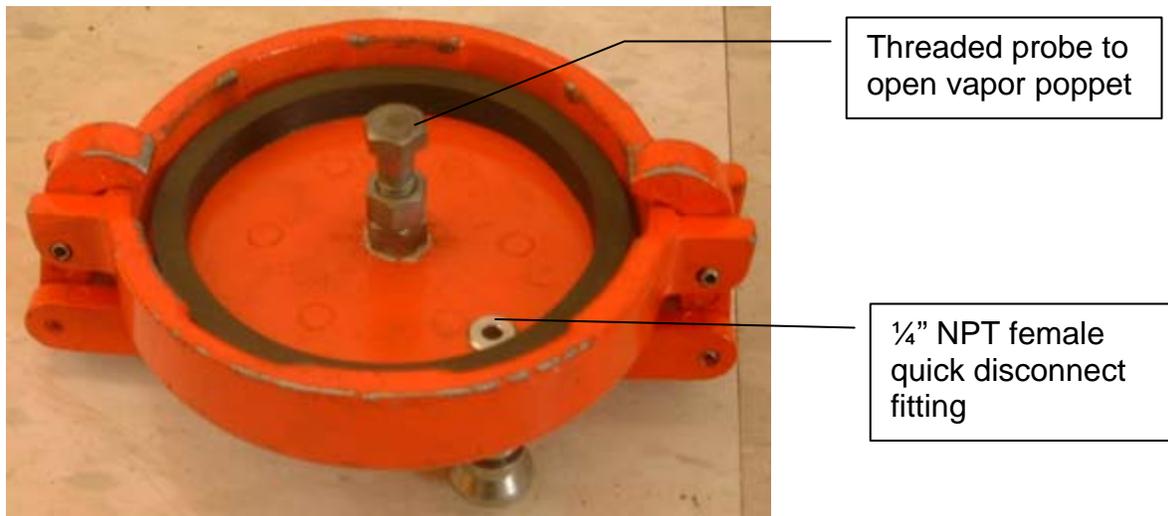
performing a site visit to facilitate matching the field data with the electronic data. The TLS system data will be provided by Veeder-Root or remotely accessed by ARB staff. Upon arriving at a test site, testing staff will synchronize timepieces with the ISD system clock to ensure proper correlation of test data to ISD data.

Testing staff will record the vapor pressure at the vapor poppet (see Figure 1.)

The basic procedure is summarized below. For a more detailed description, which includes recommended pre-test procedures, equipment descriptions, and calibration procedures; see Attachment 1, Determination of Pressure in Underground Gasoline Storage Tanks.

- A. Attach the dust cap or vapor coupler test assembly to the vapor adaptor (Figure 2). This equipment should be connected in a manner that will minimize bleeding down the ullage pressure.

**Figure 1: Typical Modified Vapor Adaptor Dust Cap (Bottom View)**



## - DRAFT -

**Figure 2: Typical Field Installation of UST Pressure Measurement Assembly**



- B. Apply soap solution to the dust cap or vapor coupler test assembly and vapor adaptor and check for visual leaks.
- C. If no leaks are detected within two minutes after applying soap solution, proceed with monitoring pressure for ten minutes and record the final reading on Form 3.
- D. Record temperature at the beginning and end of test period. This test will be invalid if temperature differential exceeds 5° F.

This pressure reading should be conducted prior to performing V/L testing. Within two days of the field test, fax the raw data sheet to Vince Bunac of the ARB staff at (916) 322-2444. ARB staff will compile data from all testing agencies and forward the compiled data to participants every three months.

### **8. Operability Test Procedure**

Testing staff will conduct the ISD Operability Test once monthly, for 18 consecutive months, minimum. The ISD Operability Test consists of two procedures: the Vapor Sensor Ambient Reference Test, and the Vapor Flow Meter Operability Test; as defined in Exhibit 9 of Executive Order VR-202-A. These two procedures are defined below. The forms to check-off and record results from these procedures are enclosed.

#### **Vapor Pressure Sensor Ambient Reference Test**

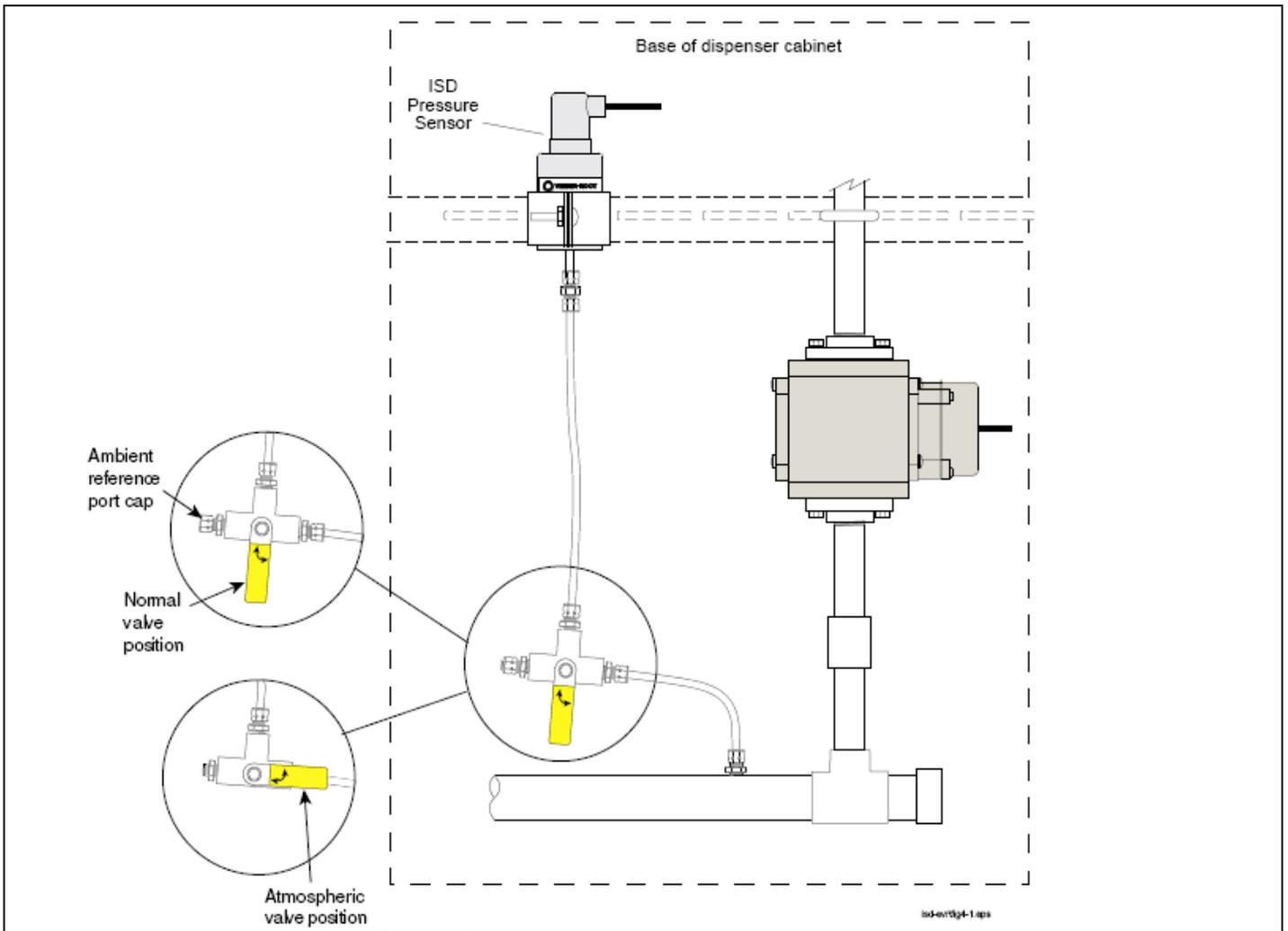
## - DRAFT -

The following procedure shall be used at field sites to determine if the Vapor Pressure Sensor is reading properly in accordance with Veeder-Root ISD specifications.

1. Access the Vapor Pressure Sensor in the dispenser. Record which dispenser contains the pressure sensor and record the pressure sensor serial number on the data form (Form 4).
2. Remove the cap from the ambient reference port of the Vapor Pressure Sensor valve and open the valve to atmosphere by turning it 90 degrees so that the flow arrows point to both the Vapor Pressure Sensor sensing port and the ambient reference port (see Figure 3).
3. Start at the 'DIAG MODE" menu at the TLS Console front panel to enter the 'Calibrate SmartSensor' menu as shown in Figure 4 to view the non-calibrated pressure value.
4. Verify that the pressure value is between +0.2 and -0.2 inches water column (IWC). If the pressure value is not within this range, leave the valve in the position described in step 2 above, replace the sensor per the ISD Pressure Sensor Installation Guide, and then retest starting at Step 3 above.
5. Replace the cap on the ambient reference port of the Vapor Pressure Sensor valve. Restore the Vapor Pressure Sensor valve by turning it 90 degrees so that the flow arrows point to both the Vapor Pressure Sensor sensing port and the UST vapor space sensing line (ref. Figure 3).
6. Press the <MODE>key to leave the "Calibrate SmartSensor' menu. Note: Do not calibrate the sensor!

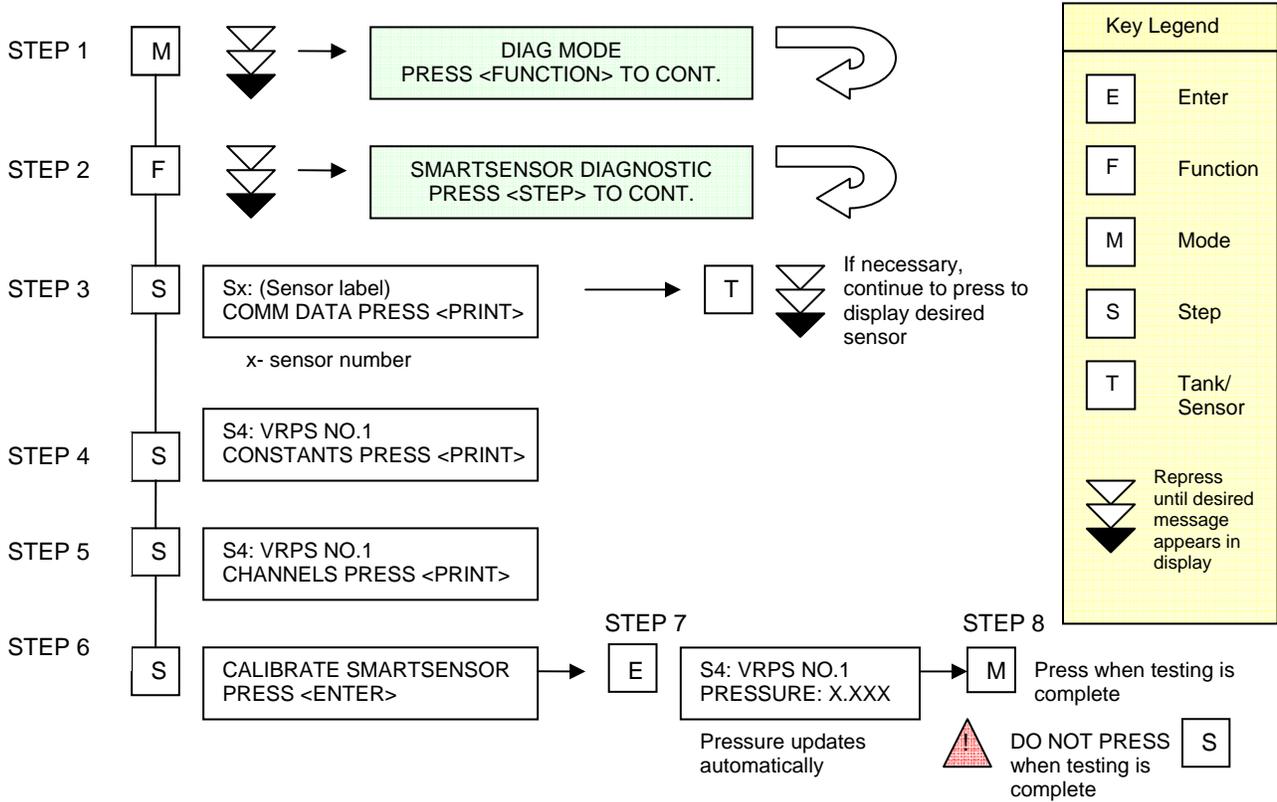
# - DRAFT -

Figure 3: Vapor Pressure Sensor Valve position



# - DRAFT -

**Figure 4: Accessing Calibrate SmartSensor Diagnostic Menu**



# - DRAFT -

## Vapor Flow Meter Operability Test

1. Obtain an ISD Daily Report printout with current Gross ISD V/L values from the TLS (see "Reports" on page 5-5 of the ISD Install, Setup and Operation Manual).
2. Select a dispenser and note the fueling point numbers on the data form (Form 5). Obtain the vapor flow meter serial number (available from the EVR/ISD Setup Printout – see Figure 3-6 in the ISD Install, Setup and Operation Manual). Conduct a Healy EVR Phase II system V/L test per Exhibit 5 of VR-202-A with the lowest grade fuel available on that dispenser.
3. Compare the ISD Daily Report Gross V/L value for that dispenser hose to the V/L test result (subtract ISD V/L value from V/L test value and note difference on Form 5).

Pass: If the difference is between -0.15 and +0.15, then the ISD V/L value is within +/- 0.15 of the V/L test value. Circle "Pass" to document that the ISD flow meter in that dispenser passes and repeat the procedure beginning at Step 2 for the next dispenser.

Continue: If the ISD V/L value is NOT within +/- 0.15 of the V/L test value, then go to Step 4.

4. Run two more V/L tests per Exhibit 5 with lowest grade fuel on the same hose and average the two results with the first V/L test result from Step 2.
5. Compare the ISD V/L value for that hose to the average of the three V/L test results (subtract ISD V/L value from average V/L test value and note difference on Form 5).

Pass: If the ISD V/L value is within +/- 0.15 of the average of the 3 V/L test results, the ISD flow meter in that dispenser passes the operability test. Go to the next dispenser and repeat the procedure beginning at Step 2.

Continue: If the ISD V/L value is NOT within +/- 0.15 of the average of the 3 V/L test results, then go to Step 6.

6. If a second fueling position is available on the dispenser, repeat the tests beginning at Step 2 for the second fueling position. If the second fueling position tests do not pass Steps 2 through 5, proceed to Step 7.
7. Replace the ISD flow meter and note the new vapor flow meter serial number on Form 5. Perform a Clear Test after Repair to reset tests for that dispenser, (see Section 7 of the ISD Install, Setup and operation Manual, ISD/PMC Diagnostic Menu) at the TLS for both fueling positions on that dispenser.

## - DRAFT -

8. After replacing the vapor flow meter, perform three V/L tests with lowest grade fuel on a hose at the dispenser and record the average of the results.
9. Obtain the next ISD reported Daily Gross V/L value for the hose during the following day or days and compare to the recorded average three V/L test results.

Pass: Circle Pass if the difference between the ISD V/L value is within +/- 0.15 of the average of the three V/L test results from Step.8

Fail: If the ISD V/L value is NOT within +/- 0.15 of the average of the three V/L test results, then repeat the entire vapor flow meter operability test until a passing result is obtained.

### 9. Summary of Testing Requirements

The testing requirements and recommended frequency of each test are summarized in Table 2.

**Table 2: Summary of Required Tests**

TEST	Protocol Section Reference	Attached Report Form #	Number of Events per Month	Number of Months	Total Number of Events
V/L Ratio Verification	5	1	10 (test runs)	18	180
Identification of ORVR Vehicles Verification	6	2	20 (refueling observed)	18	360*
UST Pressure Sensor Verification	7	3	1 (test run)	18	18
ISD Operability Test Procedure	8	4, 5	1 (test run)	18	18

\* Minimum 100 ORVR and 100 non-ORVR

# - DRAFT -

## Attachment 1

### Determination of Pressure in Underground Gasoline Storage Tanks

#### 1. Range and Accuracy

- 1.1 The minimum full scale range for digital manometer shall be 0.00 to 4.00 inches WC. The minimum accuracy shall be  $\pm 0.5\%$  full scale at 60 to 78 °F, and  $\pm 1.5\%$  full scale at 32 to 60 °F and 78 to 104 °F.
- 1.2 The temperature measuring device shall have a maximum range of 0 to 150 °F and shall be accurate to within 2 °F.
- 1.3 The stop watch shall have an accuracy of 0.1 seconds.

#### 2. Biases and Interference's

- 2.1 Leaking vapor adaptors will not allow test assembly to achieve a leak tight seal.
- 2.2 Improper connection of dust cap or vapor coupler test assembly can result in accidental discharge of vapor due to positive pressure in UST's. Wait ten (10) minutes before retesting.
- 2.3 Temperature fluctuations during test period can result in erroneous values. All testing must be avoided when temperature differences exceeds 5° F.

#### 3. Equipment

- 3.1 The dust cap test assembly shall be modified in the following manner:
  - 3.1.1 Tap, thread, and install a  $\frac{3}{4}$  inch NPT threaded probe in the center of the dust cap. The probe shall be of sufficient length to open approximately  $\frac{1}{2}$  inch of the dry break while allowing the cap to maintain a leak tight seal on the adaptor.
  - 3.1.2 Tap, thread and install a  $\frac{1}{4}$  inch NPT female quick connect fitting on the top of the dust cap, offset from the center probe. A Swagelok, part number SS-QC4-B-4-PM, quick connects fitting or equivalent is required.

## - DRAFT -

- 3.1.3 Use approximately 24 inches of ¼ inch (internal diameter) clear “Tygon tubing” or equivalent to connect the manometer to the dust cap. Install a ¼ inch male quick connect fitting, Swagelok part number SS-QC4-5-400 or equivalent, on one end of a ferrule stainless steel tube (1/8 inch internal diameter) of approximately 1.5 inches. Connect one end of the “Tygon tubing” to the stainless steel tube and connect the other end to the digital manometer.
- 3.2 Alternatively, the vapor coupler test assembly, Figures 2 and 3 of TP-201.3 may be used in lieu of the dust cap test assembly.
- 3.3 Digital Manometer (Electronic Pressure Measuring Device)
- Use a 0 - 4.00 inches WC digital manometer to monitor the UST pressure with a minimum sensitivity of 0.01 inches of WC. Dwyer Series 475 Mark III model 475-00-FM (0-4.00 inches WC) Digital manometer or equivalent is required. A copy of the manufacturer’s operating instruction shall be kept with the equipment.
- 3.4 Vacuum Grease or Petroleum Jelly
- Use commercially available vacuum grease or petroleum jelly to apply to the dust cap or vapor coupler test assembly gasket to maintain good seal.
- 3.5 Soap Solution mixture with spray bottle or “Snoop.”
- 3.6 Temperature gauge or thermometer capable of measuring ambient temperature with a resolution of 2° F.
- 3.7 Stop watch with accuracy of 0.1 seconds.

#### **4. Calibration Requirements**

A copy of the most current calibration shall be kept with the equipment to verify that the calibrations have been done appropriately.

- 4.1 Digital manometer shall be bench calibrated using a reference pressure measuring device or incline manometer. Calibration shall be performed at 20, 50, and 80 percent of full scale. Accuracy shall be within two percent at each of these calibration points. Calibration shall be conducted on a frequency not to exceed 180 days.
- 4.2 The temperature measurement device shall be checked at an interval not to exceed 180 days using an ice bath, ambient air, and boiling water. The accuracy of the temperature measuring device shall be checked against an NIST traceable temperature measuring device.

# - DRAFT -

## 5. Pre Test Procedures

- 5.1 Turn on digital manometer and allow instrument to warm up for five minutes.
- 5.2 Zero out digital manometer using adjustment pod on top of instrument in accordance with manufactures instructions. Drift may be minimized by re-zeroing immediately after use by venting both pressure port to atmosphere and adjusting the knob until the display reads exactly zero.
- 5.3 Apply thin layer of vacuum grease or petroleum jelly to gasket located under the dust cap or vapor coupler test assembly.
- 5.4 Attach male quick connect fitting of pressure line to cap.
- 5.5 Attach digital manometer to open end of Tygon tubing.

## 6. Test Procedure

- 6.1 Attach the dust cap or vapor coupler test assembly to the vapor adaptor.
- 6.2 Apply soap solution to the dust cap or vapor coupler test assembly and vapor adaptor and check for visual leaks.
- 6.3 If no leaks are detected within two minutes after applying soap solution, proceed with monitoring pressure for ten minutes and record on Form 3 the time, pressure, and whether the processor is on.
- 6.4 Record temperature at the beginning and end of test period on Form 3. This test will be invalid if temperature differential exceeds 5° F.







# - DRAFT -

## Form 4

### Vapor Pressure Sensor Ambient Reference Test

---

DATE OF TEST \_\_\_\_\_

SERVICE COMPANY NAME	SERVICE COMPANY'S TELEPHONE
SERVICE TECHNICIAN	VEEDER-ROOT TECH CERTIFICATION #
STATION NAME	DISTRICT PERMIT #
STATION ADDRESS	CITY STATE ZIP

STEP 1.	PRESSURE SENSOR LOCATION: DISPENSER FUELING POINT NUMBERS    FP___/FP___	PRESSURE SENSOR SERIAL NUMBER _____
STEP 2.	REFERENCE PORT CAP REMOVED? <input style="float: right;" type="checkbox"/> VALVE SET TO REFERENCE PORT (PER FIG. 3.) <input style="float: right;" type="checkbox"/>	
STEP 3.	NON-CALIBRATED SENSOR VALUE _____ INCHES OF WATER COLUMN (OBTAIN VALUE USING TLS CONSOLE KEYPAD SEQUENCE SHOWN IN FIG. 4 STEP 7)	
STEP 4.	PRESSURE BETWEEN +0.20 & -0.20 (Y/N)? <input style="float: right;" type="checkbox"/> IF NO: REPLACE PRESSURE SENSOR: NEW SENSOR SERIAL NUMBER _____ NEW SENSOR VALUE _____ INCHES OF WATER COLUMN NEW SENSOR PRESSURE BETWEEN +0.20 & -0.20 (Y/N)? <input style="float: right;" type="checkbox"/>	
STEP 5.	REFERENCE PORT CAP REPLACED? <input style="float: right;" type="checkbox"/> VALVE SET TO VAPOR SPACE PORT (PER FIG 3.)? <input style="float: right;" type="checkbox"/>	
STEP 6.	MODE KEY PRESSED TO EXIT CALIBRATE SMARTSENSOR MENU? <input style="float: right;" type="checkbox"/>	

# - DRAFT -

Form 5 (page 1 of 2)

**Veeder-Root In-Station Diagnostics (ISD)  
Vapor Flow Meter Operability Test Procedure**

---

DATE OF TEST \_\_\_\_\_

SERVICE COMPANY NAME	SERVICE COMPANY'S TELEPHONE		
SERVICE TECHNICIAN	VEEDER-ROOT TECH CERTIFICATION #		
STATION NAME	DISTRICT PERMIT #		
STATION ADDRESS	CITY	STATE	ZIP

VAPOR FLOW METER SERIAL NUMBER _____
DISPENSER FUELING POINT NUMBERS      FP _____      FP _____

STEP 1.	ISD DAILY REPORT GROSS V/L VALUES		
STEP 2.	LOW GRADE FUEL HOSE V/L RESULT #1 (ONE FP ONLY)		
STEP 3.	STEP 1. VALUE MINUS STEP 2. VALUE	DIFF.	DIFF.
	PASS IF DIFFERENCE IS WITHIN +/-0.15, IF LARGER DIFFERENCE, THEN CONTINUE TO STEP 4 (CIRCLE ONE)	PASS      CONTINUE TO STEP 4	PASS      CONTINUE TO STEP 4
STEP 4.	LOW GRADE FUEL HOSE V/L RESULT #2		
	LOW GRADE FUEL HOSE V/L RESULT #3		
	AVERAGE OF 3 V/L RESULTS	AVG.	AVG.
STEP 5.	STEP 1. VALUE MINUS STEP 4. AVG.	DIFF.	DIFF.
	PASS IF DIFFERENCE IS WITHIN +/-0.15, IF LARGER DIFFERENCE, THEN CONTINUE TO STEP 6 OR 7 (CIRCLE ONE)	PASS      CONTINUE TO STEP 6	PASS      CONTINUE TO STEP 7
STEP 6.	IF CONTINUE, REPEAT AT STEP 2. FOR 2 <sup>ND</sup> FP USING 2 <sup>ND</sup> FP COLUMN, ABOVE.		

# - DRAFT -

## Form 5 (page 2 of 2)

**Veeder-Root In-Station Diagnostics (ISD)  
Vapor Flow Meter Operability Test Procedure**

---

DATE OF TEST \_\_\_\_\_

<b>STEP 7.</b>	REPLACE FLOW METER <span style="float: right;"><input type="checkbox"/></span>		
	NEW VAPOR FLOW METER SERIAL NUMBER _____		
	PERFORMED "CLEAR TEST AFTER REPAIR" AT TLS FOR BOTH FP'S? <span style="float: right;"><input type="checkbox"/></span>		
DISPENSER FUELING POINT NUMBERS    FP _____    FP _____			
<b>STEP 8.</b>	LOW GRADE FUEL HOSE V/L RESULT #1 (ONE FP ONLY)		
	LOW GRADE FUEL HOSE V/L RESULT #2		
	LOW GRADE FUEL HOSE V/L RESULT #3		
	AVERAGE OF 3 V/L RESULTS	AVG.	AVG.

**IMPORTANT:**  
WAIT FOR NEXT ISD DAILY REPORT GROSS A/L RESULTS FOR NEW METER (AT LEAST ONE DAY).

SERVICE TECHNICIAN \_\_\_\_\_ DATE OF TEST \_\_\_\_\_

DISPENSER FUELING POINT NUMBER    FP _____		
<b>STEP 9.</b>	ISD DAILY REPORT GROSS V/L VALUE	
	STEP 9. VALUE MINUS STEP 8. AVG.	DIFF.
	PASS IF DIFFERENCE IS WITHIN +/-0.15, OTHERWISE FAIL (CIRCLE ONE)	PASS      FAIL

\*Measure V/L using test procedure in Exhibit 5 of VR-202-A.