Executive Order VR-204-AF

Balance Phase II EVR System
including In-Station Diagnostic (ISD)

EXHIBIT 20

INCON ISD System Vapor Pressure Sensor Verification Test Procedure

Definitions common to all certification and test procedures are in:

D-200 Definitions for Vapor Recovery Procedures

For the purpose of this procedure, the term "ARB" refers to the California Air Resources Board, and the term " ARB Executive Officer" refers to the ARB Executive Officer or his or her authorized representative or designate.

1. PURPOSE AND APPLICABILITY

1.1. The purpose of this test procedure is to determine if the INCON ISD System Vapor Pressure Sensor (listed in Exhibit 1) is operating in accordance with the vapor pressure sensor requirements of Exhibit 2. This procedure is used:

1.1.1 To determine whether the Vapor Pressure Sensor complies with the performance specification when the sensor is exposed to ambient pressure.

1.1.2 To determine the measured ullage pressure in underground gasoline storage tanks (USTs) installed at gasoline dispensing facilities (GDFs) equipped with Balance Phase II Enhanced Vapor Recovery System Including INCON ISD and compare to the pressure reading of the INCON ISD System at the Vapor Recovery Monitoring (VRM) console.

1.2. This procedure is applicable for compliance testing.

2. PRINCIPLE AND SUMMARY OF TEST PROCEDURE

2.1. **Determining Ambient Pressure** - The Vapor Pressure Sensor (VPS) is subjected to ambient pressure by turning the Vapor Pressure Sensor valve, which is located in the dispenser closest to the tanks, to the Atmospheric Valve Position as shown in Figure 20-2. This test can be performed while product is being dispensed into motor vehicles.

2.2. **Determining UST Pressure** - The pressure of the Underground Storage Tank (UST) is determined at the Phase I vapor recovery adaptor (dry break assembly) with a vapor coupler test assembly as shown in Figures 20-2 and 20-3 of TP-201.3 (*Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities*) or a modified dust cap test assembly as shown in Figures 20-1a and 20-1b of this exhibit. The test assembly is equipped with a center probe, which opens the dry break, and a quick connect fitting that is connected to an electronic pressure measuring device or digital manometer. The test assembly should open the dry break with minimal venting of the USTs. This test can be performed while product is being dispensed into motor vehicles.

3. BIASES AND INTERFERENCES

3.1. This test shall not be conducted within 30 minutes following gasoline transfer from a cargo tank.

3.2. If the system has a Hirt VCS-100 Processor, test shall not be conducted if the processor is operating (the VCS-100 Vapor Processor is running if the green indicator lamp on the Hirt indicator panel is lit).

3.3. This test shall not be conducted if the system ullage pressure is less than negative eight (-8.0) inches WC or greater than positive eight (+8.0) inches WC.

4. RANGE, AND ACCURACY

4.1. **Digital Manometer** (Electronic Pressure Measuring Device). Minimum readability shall be 0.01 inches WC with measurement range(s) to include at least up to positive and negative ten (±10) inches WC with a minimum accuracy of plus or minus 0.05 inches WC of full scale within the compensated temperature ranges/limits.

5. EQUIPMENT

5.1. The dust cap test assembly shall be modified in the following manner:

5.1.1 Install a probe in the center of the dust cap as shown in Figure 20-1a (one method is to tap and thread probe). The probe shall be of sufficient length to open approximately ½ inch of the dry break while allowing the cap to maintain a leak tight seal on the adaptor.

5.1.2 Install female quick connect fitting on the top of the dust cap, offset from the center probe as shown in Figure 20-1a. A Swagelok, part number SS-QC4-B-4-PM, quick connect fitting or equivalent can be used.

5.1.3 Use "Tygon tubing" or equivalent to connect the manometer to the dust cap (Figure 20-1b). Install a male quick connect fitting (Swagelok part number SS QC4-5-400 or equivalent can be used) on one end of a ferrule stainless steel tube (or equivalent material). Connect one end of the "Tygon tubing" to the stainless steel tube and connect the other end to the digital manometer (Figure 20-1b).

5.2. Alternatively, the vapor coupler test assembly, Figures 20-2 and 20-3 of TP 201.3 may be used in lieu of the dust cap test assembly.

5.3. Digital Manometer (Electronic Pressure Measuring Device)

5.4. Use a minimum range ±10.00 inches WC digital manometer to monitor the UST pressure with a minimum readability of 0.01 inches of WC. Dwyer Series 475 Mark III Digital manometer or other digital manometer can be used. A digital manometer must have a minimum accuracy of plus or minus 0.05 inches WC of

full scale within the compensated temperature ranges/limits (for Dwyer 475 Mark III full scale temperature must be between 60 – 78 degrees F). A copy of the manufacturer's operating instructions shall be kept with the equipment.

6. Digital Manometer Calibration Requirements

6.1. A copy of the most current calibration of the digital manometer shall be kept with the equipment.

6.2. All digital manometers shall be bench tested for accuracy using a reference gauge, incline manometer or National Institute of Standards and Technology (NIST) traceable standard at least once every twelve (12) consecutive months. Accuracy checks shall be performed at a minimum of five (5) points (e.g., 10, 25, 50, 75 and 90 percent of full scale) each for both positive and negative pressure readings. Accuracy shall meet the requirements of Section 3.2 of TP-201.3.

7. Pre-Test Procedure

7.1. Turn on digital manometer and allow instrument to warm up for five minutes.

7.2. Zero out digital manometer using adjustment pod on top of instrument in accordance with manufacturer's instructions. Drift may be minimized by re zeroing immediately after use by venting both pressure ports to atmosphere and adjusting the knob until the display reads exactly zero.

7.3. Attach the male quick connect fitting to the female quick connect fitting on the modified vapor dust cap.

7.4. Attach digital manometer to open end of Tygon tubing.

Determining Ambient Pressure

8. Test Procedure for Testing the INCON ISD System Vapor Pressure Sensor at Ambient Pressure

8.1. Access the INCON ISD System Vapor Pressure Sensor, which is located in the dispenser closest to the USTs. Record the Vapor Pressure Sensor location and serial number on the data forms 1 and 2.

8.2. Turn the Vapor Pressure Sensor ball valve to the closed position. This isolates the Vapor Pressure Sensor from the UST ullage space (see Figure 20-2).

8.3. Remove the plug from the Vapor Pressure Sensor ball valve (see Figure 20-2).

8.4. Verify on the VRM Status on the LCD of the console that the pressure value is zero inches WC, ±0.20 inches WC.

If the vapor pressure sensor is within ±0.2 inches WC of zero, proceed to Section 8.5 of this exhibit.

If the pressure value is not within ±0.2 inches WC of zero, the vapor pressure sensor will need to be calibrated. Proceed to section 8.4.1 to 8.4.3.

8.4.1 On the LCD of the console, go to the VRM Control page, refer to Figure 20-3, and perform the following steps

a. Press the CONTROL icon. This allows access to the control menu screen.
b. Press the CALIBRATE ZERO OFFSET icon.
c. Press anywhere in the upper calibration box. Select "Yes" to calibrate the sensor. This will zero the pressure reading for atmospheric pressure.

8.4.2 Verify on the VRM Status page that the pressure value is now reading zero (0.0) inches WC, ±0.20 inches WC.

8.4.3 If the pressure reading from the INCON VRM Console is NOT within ±0.2 inches WC from zero, **the Vapor Pressure Sensor is not in compliance with the pressure sensor requirements of Exhibit 2**. Proceed to the INCON ISD System trouble shooting manual available on the Franklin Fueling Systems website.

8.5. Record the above information on Form 1 "Data Form for Vapor Pressure Sensor Ambient Reference Test." Districts may require the use of an alternate form, provided it includes the same minimum parameters as identified in the Data Form.

8.6. Reinstall the plug on the Vapor Pressure Sensor ball valve. Turn the ball valve handle to the "normal position" (See Figure 20-2).

Determining UST Pressure

9. Test Procedure for Testing the INCON ISD System Vapor Pressure Sensor at UST Pressure

9.1. Attach the dust cap or vapor coupler test assembly to the vapor adaptor (Figure 20-1b).

9.2. On the touch-screen display at the INCON VRM console, go to the VRM»Status page.

9.3. Simultaneously record the ullage pressure from the digital manometer (connected to the vapor coupler test assembly) and the INCON VRM Console. Record the above information on Form 2 "Data Form for Vapor Pressure Sensor UST Pressure Test." Districts may require the use of an alternate form, provided it includes the same minimum parameters as identified in the Data Form.

9.4. Verify the vapor pressure sensor reading from the INCON VRM Console is within ±0.2 inches WC from the digital manometer reading. If difference is not within ±0.2 inches WC, **the Vapor Pressure Sensor is not in compliance with the pressure sensor requirements of Exhibit 2**. Proceed to the INCON ISD System trouble shooting manual available on the Franklin Fueling Systems website.

10. Alternate Procedures

This procedure shall be conducted as specified. Any modifications to this test procedure shall not be used unless prior written approval has been obtained from the ARB Executive Officer, pursuant to Section 14 of CP-201.

FIGURE 20-1a

Typical Modified Phase I Vapor Adaptor Dust Cap (Bottom View)

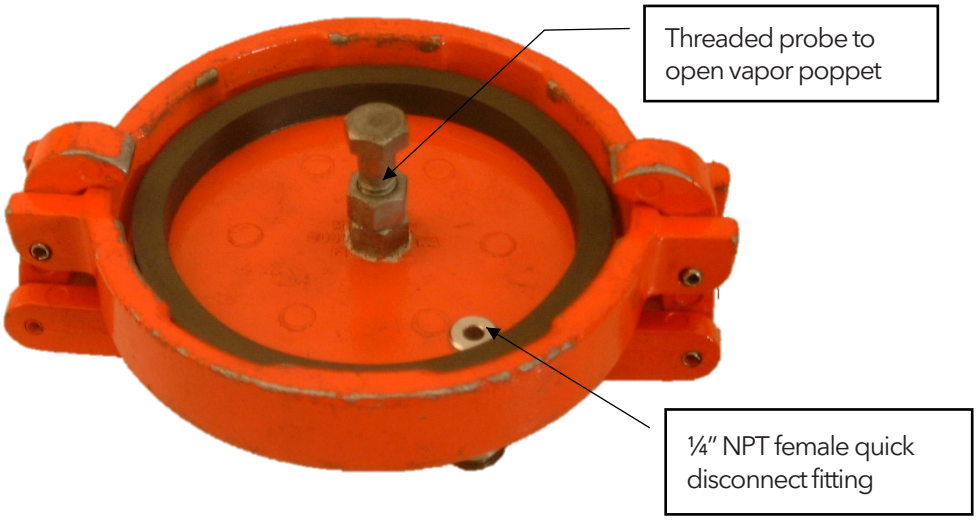


FIGURE 20-1ab

Typical Field Installation of UST Pressure Measurement Assembly

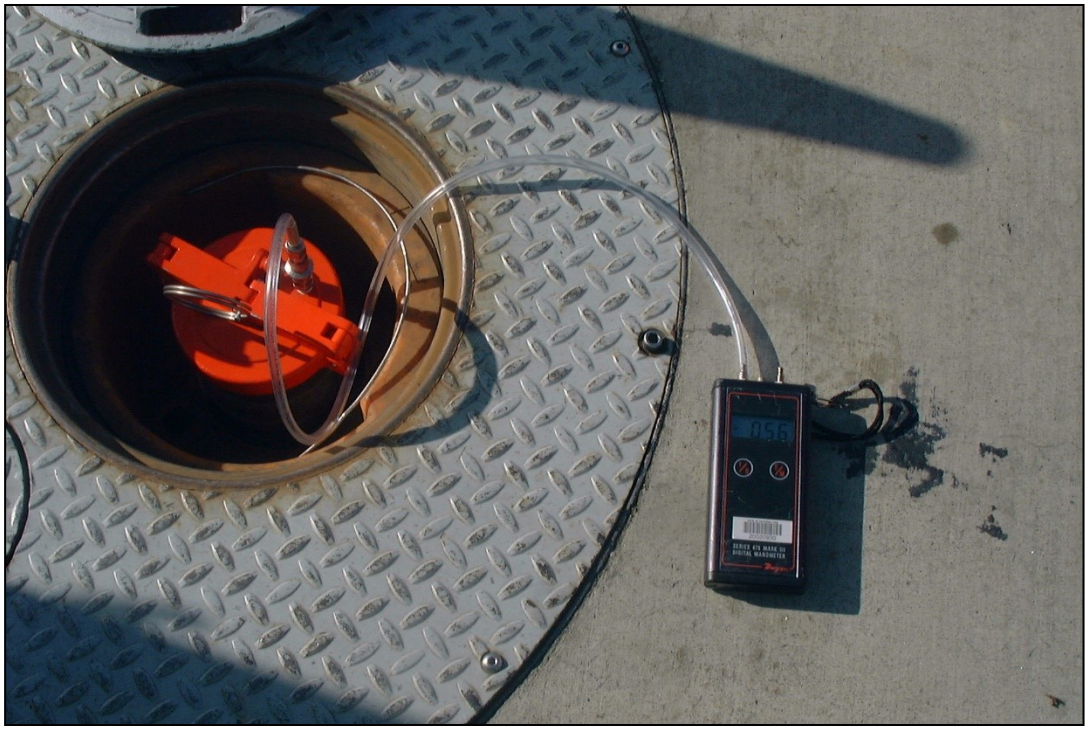
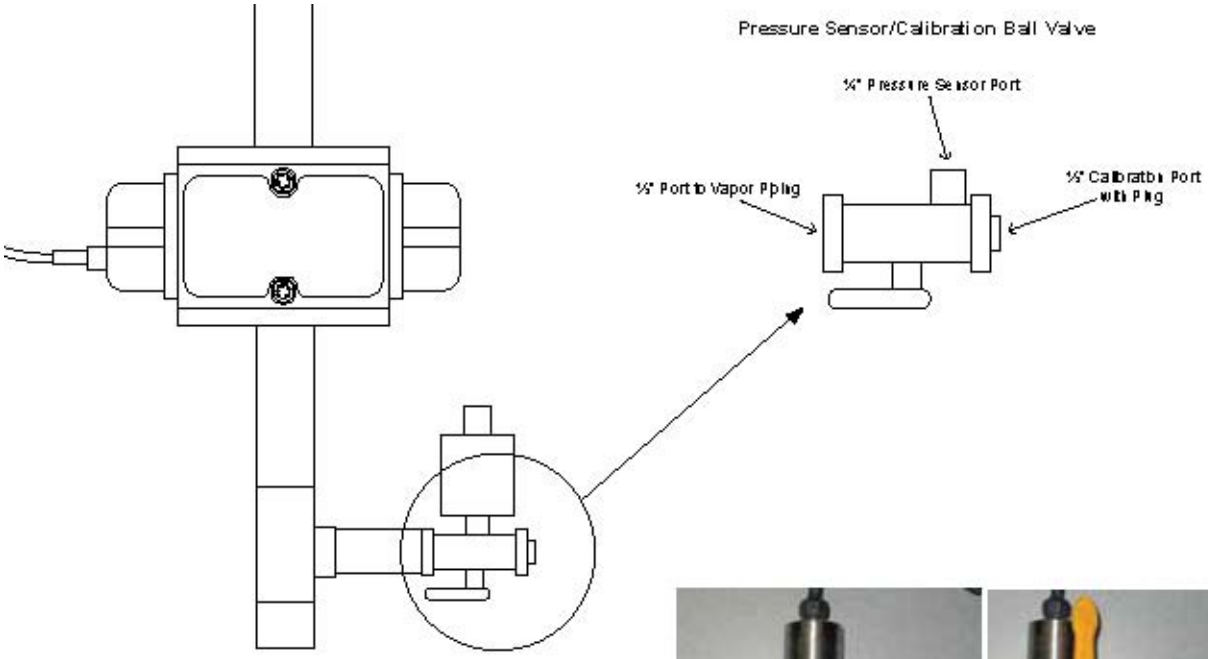


FIGURE 20- 2

Vapor Pressure Sensor Test Port





Valve in Normal Position

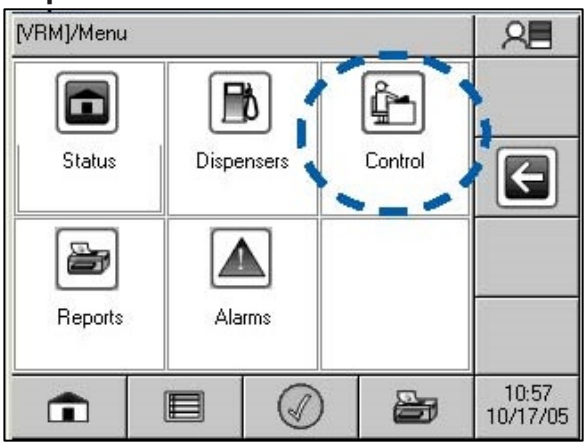


Valve in Test Setup with Plug Removed

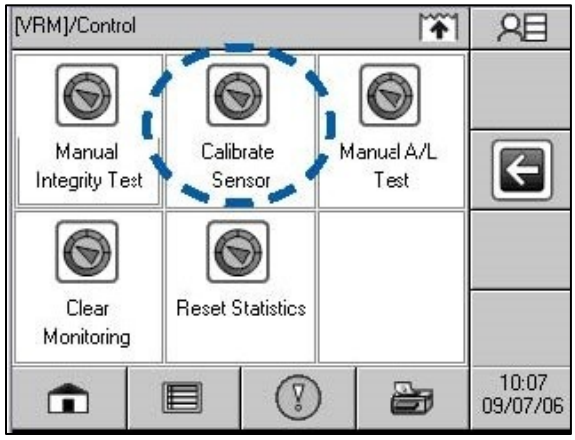
FIGURE 20-3

Steps to Calibrate the Vapor Pressure Sensor

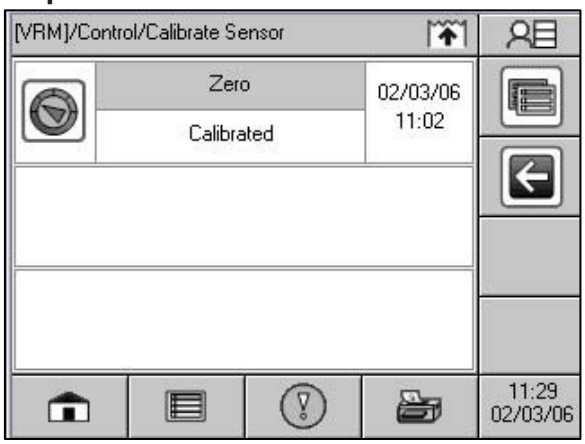
Step A



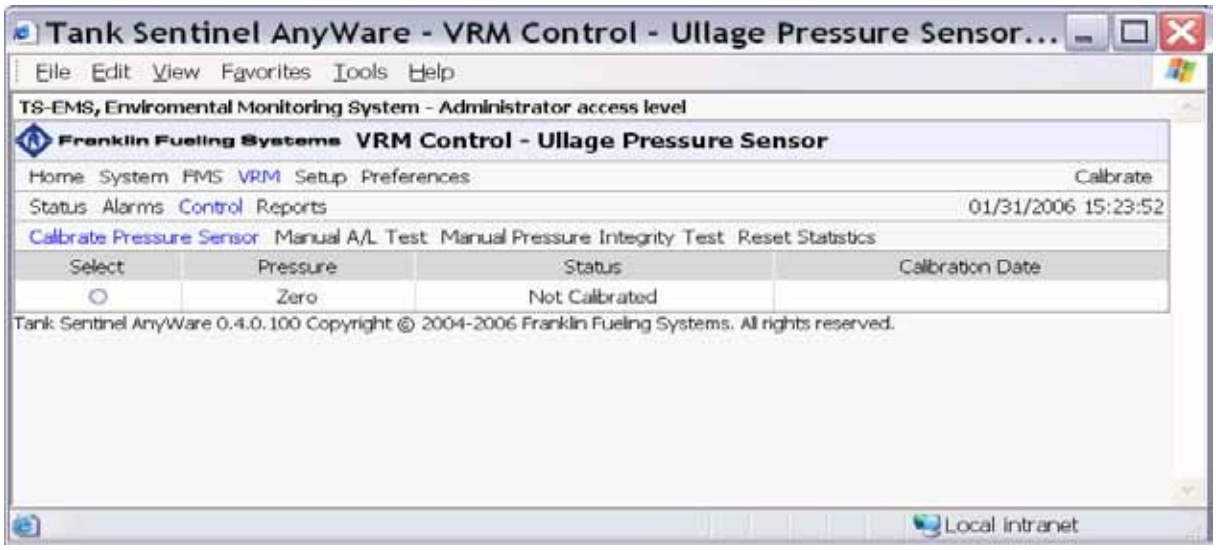
Step B



Step C



Calibrate Pressure Sensor Web Page View



FORM 1

Data Form for Vapor Pressure Sensor Ambient Reference Test

DATE OF TEST _____

SERVICE COMPANY NAME	**SERVICE COMPANY'S TELEPHONE**
SERVICE TECHNICIAN	**VST or VEEDER-ROOT TECH CERTIFICATION # (as applicable)** **ICC or DISTRICT TRAINING CERTIFICATION (as applicable)**
STATION NAME	**DISTRICT PERMIT #**
STATION ADDRESS **CITY** **STATE ZIP**	

STEP 8.1	**PRESSURE SENSOR LOCATION:** **DISPENSER NUMBER**	_____	**PRESSURE SENSOR SERIAL NUMBER:** _____
STEP 8.3	**VAPOR PRESSURE SENSOR BALL VALVE PLUG REMOVED?** ☐ **VALVE SET TO AMBIENT REFERENCE POSITION (PER FIG. 2)?** ☐		
STEP 8.4	**AMBIENT PRESSURE SENSOR VALUE _____ Inches WC** **(OBTAIN PRESSURE VALUE FROM THE VRM STATUS ON THE LCD OF THE CONSOLE**).		
STEP 8.4	**IS THE PRESSURE BETWEEN +0.20 & -0.20?** **Yes** ☐ **No** ☐ IF NO, THE VAPOR PRESSURE SENSOR MAY NEED TO BE CALIBRATED. TO CALIBRATE PRESSURE SENSOR, REFER TO SECTION 8.4.1 OF THE VAPOR PRESSURE SENSOR TEST PROCEDURE. **AFTER SUCCESSFULLY COMPLETING VAPOR PRESSURE SENSOR CALIBRATION** **IS THE PRESSURE BETWEEN +0.20 & -0.20?** **Yes** ☐ **No** ☐ IF NO: THE PRESSURE SENSOR IS NOT IN COMPLIANCE WITH THE PRESSURE SENSOR REQUIREMENTS OF EXHIBIT 2. PROCEED TO THE INCON ISD SYSTEM TROUBLESHOOTING MANUAL AVAILABLE ON THE FRANKLIN FUELING SYSTEMS WEBSITE.		

STEP 8.5	**VAPOR PRESSURE SENSOR BALL VALVE PLUG REINSTALLED?**	☐
	BALL VALVE SET TO NORMAL POSITION (See FIG. 20-2)?	☐

FORM 2

Data Form for Vapor Pressure Sensor UST Pressure Test

DATE OF TEST _____

SERVICE COMPANY NAME	**SERVICE COMPANY'S TELEPHONE**
SERVICE TECHNICIAN	**FFS INCON ISD TECH CERTIFICATION # (as applicable)** **ICC or DISTRICT TRAINING CERTIFICATION (as applicable)**
STATION NAME	**DISTRICT PERMIT #**
STATION ADDRESS **CITY** **STATE ZIP**	

PRESSURE SENSOR LOCATION: **DISPENSER NUMBER:**	_____	**PRESSURE SENSOR SERIAL NUMBER:** _____

STEP 9.3	**UST PRESSURE DIGITAL MANOMETER VALUE _____ INCHES WC**
STEP 9.3	**UST PRESSURE FROM INCON ISD SYSTEM VRM CONSOLE _____ Inches WC** **(OBTAIN PRESDSURE VALUE FROM THE VRM STATUS ON THE LCD OF THE CONSOLE**).
STEP 9.5	**VRM CONSOLE SENSOR VALUE WITHIN ±0.2 INCHES WC OF DIGITAL MANOMETER VALUE? YES ☐ NO ☐** **IF NO: THE PRESSURE SENSOR IS NOT IN COMPLIANCE WITH THE PRESSURE SENSOR REQUIREMENTS OF EXHIBIT 2. PROCEED TO THE INCON ISD SYSTEM TROUBLE SHOOTING MANUAL AVAILABLE ON THE FRANKLIN FUELING SYSTEMS WEBSITE.**