

**Executive Order VR-201-AA and  
VR-202-AA Assist Phase II EVR System**

**EXHIBIT 15**

**ARID Technologies AT-150 Permeator Compliance 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 "CARB" refers to the California Air Resources Board, and the term "CARB Executive Officer" refers to the Executive Officer of CARB or his or her authorized representative or designate.

**1. PURPOSE AND APPLICABILITY**

- 1.1 This procedure will determine the exhaust concentration of the ARID Technologies, Inc. (ARID) Permeator AT-150 (Permeator) processor installed at gasoline dispensing facilities (GDFs) using a portable hydrocarbon analyzer (HC Analyzer) calibrated with known hydrocarbon concentration (propane) calibration gases.
- 1.2 This procedure is applicable for compliance testing.
- 1.3 The station must be closed while conducting this procedure.

**2. PRINCIPLE AND SUMMARY OF TEST PROCEDURE**

Known concentrations of certified calibration gases are flowed through the HC analyzer to verify accuracy of hydrocarbon measurement prior to testing the Permeator. Next, the HC analyzer is connected to the Permeator exhaust line testing port. Continuous sampling through the HC analyzer is done during normal processor operation. Sampling of Permeator exhaust is conducted continuously through at least one normal 40-minute run cycle with at least five (5) HC analyzer measurements being made at 5-minute intervals beginning 10 minutes after Processor ON. The average of the five measurements is then compared to a maximum measurement based upon allowable HC concentration of the Processor during operation and the accuracy of the HC analyzer.

**3. BIASES, INTERFERENCES AND RECOMMENDATIONS**

- 3.1 Pressure growth at a GDF is variable and can depend on many factors, including but not limited to fuel volatility, Phase I cargo tank deliveries, time of day and operational hours. If there is minimal pressure growth when conducting this test procedure, it could result in insufficient data to calculate processor performance.
- 3.2 This test cannot be conducted while the GDF is actively dispensing fuel.
- 3.3 Running report IV8000 off the TLS-350 will list the Permeator On/Off and runtime for each cycle. This information can narrow down the best times to conduct the test.
- 3.4 Ambient temperature fluctuations can affect the Hydrocarbon Analyzer.

- 3.5 This test procedure may be conducted after a leak decay test (TP-201.3) by using the Permeator AT-150 to remove the pressure in the UST system instead of venting the station to atmospheric pressure.

#### 4. EQUIPMENT AND SUPPLIES

- 4.1 Pressure regulators for the calibration check gas cylinder and inlet test gas cylinder.
- 4.2 Flow meter, with flow control valve (optional if the Portable Hydrocarbon Analyzer has one)

Use a Dwyer Model RMA-4-SSV, or equivalent flow meter capable of adjusting calibration gas flow so that the flow measurement on the HC Analyzer is steady at 2 standard cubic feet per hour (SCFH).

- 4.3 Calibration Gases

Cylinders of calibration gases using propane in nitrogen listed below.

- (1) High-Range Gas: Concentration between 5-10% by volume.
- (2) Low-Range Gas: Concentration between 2-4% by volume.

- 4.4 Zero Gas

Cylinder of nitrogen with a minimum purity level of 99.998%.

- 4.5 Stopwatch with an accuracy of  $\pm 0.2$  seconds.
- 4.6 Gasoline resistant hoses, fittings and connectors.
- 4.7 Portable NDIR hydrocarbon analyzer, 0 to 100 percent range, with a minimum accuracy of  $\pm 2.0$  % of full scale, such as Nova Model 317WP (with NDIR HC sensor) or equivalent. Only an NDIR analyzer calibrated to propane may be used for this test. The manufacturer operating instructions for the HC analyzer and proof or evidence that the sensor is NDIR shall be kept with the equipment at all times so that proper procedure can be verified.

#### 5. CALIBRATIONS

The calibration gases must be certified according to the following:

To an analytical accuracy of  $\pm 2\%$ , traceable to a reference material approved by the National Institute of Standards and Technology (NIST) and recertified at least every two years.

Information on calibration gas cylinders shall be entered into a log identifying each cylinder by serial number. Documentation of certification shall be maintained with the gas cylinders at all times and shall also be attached to Form 1. The calibration gas log shall be maintained with the gas cylinders at all times and made readily available to the district upon request. Sufficient information shall be maintained to allow a determination of the certification status of each calibration gas and shall include: (1) the date put in service, (2)

assay result, (3) the dates the assay was performed, and (4) the organization and specific personnel who performed the assay.

## 6. PRE-TEST REQUIREMENTS

Install all required testing apparatus as illustrated in Figure 1. Connect the calibration test gas to the inlet of the HC sensor. Install the outlet tubing to the HC sensor outlet tee. This tubing is used to vent off calibration gases and processor exhaust to atmosphere away from testing personnel.

### 6.1 Pre-Test HC Analyzer Calibration:

- 6.1.1 Follow the HC Analyzer manufacturer procedures for instrument start-up and warm-up.
- 6.1.2 Check the zero reading of the HC analyzer using nitrogen following the manufacturer's procedure. If the result is  $\pm .10\%$ , re-zero the instrument per the manufacturer's recommended procedures. Record the zero gas calibration gas concentration (% propane) on Form 1.
- 6.1.3 Set the span on the instrument to the HC concentration of the High-Range calibration gas cylinder.
- 6.1.4 Check the calibration of the HC analyzer by running the calibration check gas following the manufacturer's procedure. Record the High-Range calibration gas concentration on Form 1. If the result is outside of the required range, then the analyzer shall be recalibrated per manufacturer specifications prior to conducting the test.
- 6.1.5 Check the Low-Range calibration of the analyzer by running the low-end calibration gas per the manufacturer's procedure. If the result is outside the minimum instrument accuracy as stated in section 4.7, then the analyzer shall be recalibrated per manufacturer specifications prior to conducting the test. Record the Low-Range range calibration gas concentration on Form 1. After a minimum of 10 minutes, record the reading on the instrument.

## 7. TEST PROCEDURE

### 7.1 Compliance Procedure:

- 7.1.1 Install a section of tubing from the Permeator Exhaust Test Port (See Figure 2) into the HC Analyzer and turn on the analyzer sample pump. Set the inlet test gas flow rate to 2 scfh. Adjust the flow rate as necessary during the test to maintain the correct flow rate. If the flow is lower than 2 scfh, verify that there are no kinks or obstructions in the tubing. If the flow is still lower than that, consult the manufacturer of the HC Analyzer for troubleshooting sample pump operation.
- 7.2.2 If the Permeator is running, begin a stopwatch and wait ten (10) minutes. If the Permeator is Off, wait until it starts and then begin a stopwatch and wait ten (10) minutes. After either of these 10 minute periods, record the HC Analyzer reading and the time on Form 1.

- 7.2.3 Continue recording HC Analyzer readings and time in 5-minute increments for 20 minutes (5 recordings total). Record these readings and times on Form 1. If the Permeator shuts off before 5 readings, repeat sections 7.2.2 and 7.2.3 until completed.
- 7.2.4 Calculate the average HC concentration from the 5 readings and record this on Form 1.
- 7.2.5 If the HC concentration average is less than or equal to 3.0%, record the compliance test as a "Pass". If the concentration average is greater than 3.0% HC, record the compliance test as a "Fail". If a failure is recorded, the ARID Permeator AT-150 is not in compliance with Exhibit 2.

## 8. **ALTERNATIVE TEST PROCEDURES**

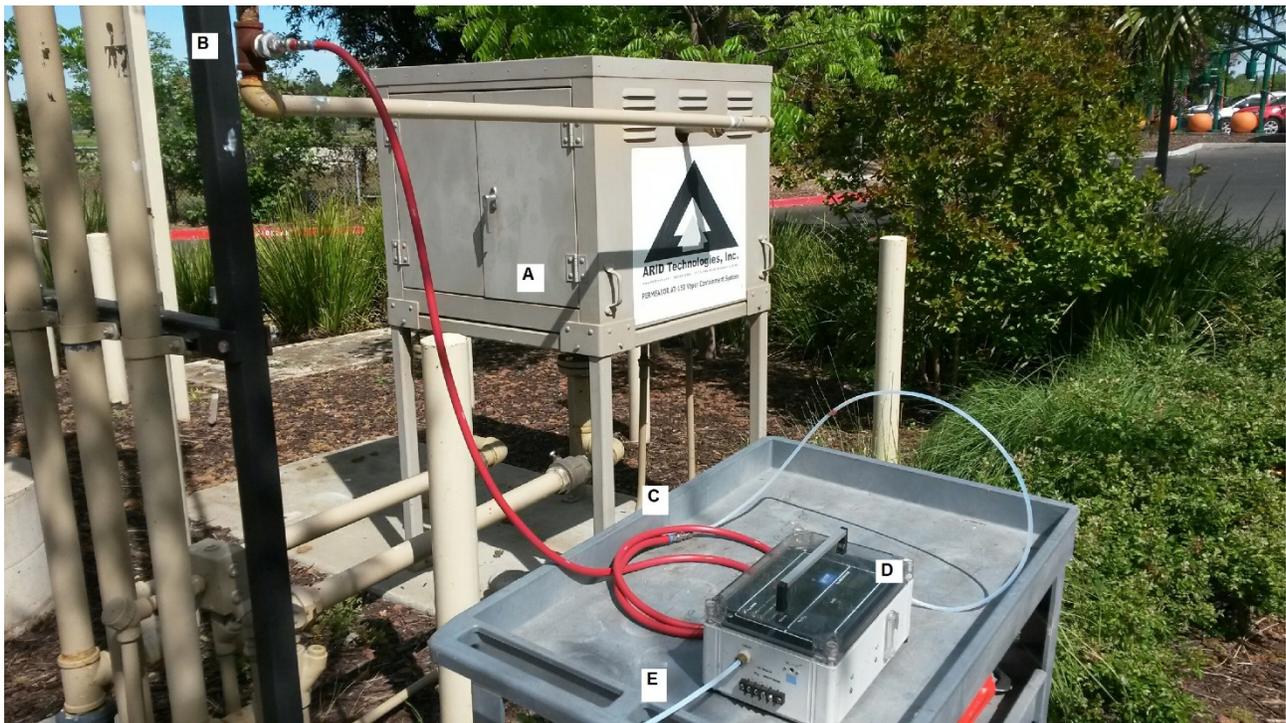
This procedure shall be conducted as specified. Modifications to this test procedure shall not be used to determine compliance unless prior written approval has been obtained from the CARB Executive Officer or delegate, pursuant to Section 14 of Certification Procedure CP-201.

**Figure 1**  
**Equipment Configuration for HC Analyzer Calibration**



- A – HC Analyzer
- B – Calibration or Zero Gas Cylinder
- C – 2-Stage Regulator
- D – Flow Meter with Flow Control Valve
- E – Calibration Gas (Green) Hose to Flow Controller
- F – Calibration Gas (Red) Hose from Flow Controller to HC Analyzer Inlet
- G – HC Analyzer Exhaust

**Figure 2**  
**Equipment Configuration for Measuring Permeator Exhaust**



- A – Permeator AT-150
- B – Exhaust Test Port Tee (1" NPT)
- C – Hose from Exhaust Test Port to HC Analyzer Inlet
- D – HC Analyzer
- E – HC Analyzer Exhaust

**Form 1**

<b>ARID Permeator AT-150 Processor Compliance Verification Data Sheet</b>		
Facility:	Test Company:	
Address:	Test Personnel:	
City:	Certified Permeator Technician (CPT) Certification # (as applicable)	
State:		
Zip Code:		
ICC or District Training Certification (as applicable)		
<b>Calibration Gas Concentration (% Propane). Note: Calibration gas information listed in Section 4 of Exhibit 15 shall be attached to this form.</b>		
Zero Gas:	High-Range Gas:	Low-Range Gas:
Serial #:	Serial #:	Serial #:

**Test Results**

Measurement	Time of Measurement	HC Analyzer Reading	Average of Measurements	Maximum Average HC Allowed	Pass/Fail
1				≤ 3.0%	
2					
3					
4					
5					