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ATTACHMENT L: VAPOR RECOVERY TESTS FOR PHASE I EVR SYSTEMS AND BALANCE PHASE II EVR SYSTEMS LOCATED AT GASOLINE DISPENSING FACILITIES EQUIPPED WITH UNDERGROUND STORAGE TANKS

REQUIRED TESTING

	Vapor Recovery System	Pressure Decay	Phase I	Phase II Hanging Hardware	Phase II Processor	Phase II ISD
PHASE I	Phil Tite (VR-101-X)[1, 2] OPW (VR-102-X)[1, 2] CNI (VR-104-X)[1, 2] Emco Wheaton (VR-105-X)[1, 2]	TP-201.3[3,4, 8]	Torque of Phase I Adaptors (TP-201.1B) Integrity of the Drop Tube/Drain Valve (TP-201.1C/ TP-201.1D) Leak Rate and Cracking Pressure of P/V Relief Vent Valves (TP-201.1E)[5, 6]	N/A	N/A	N/A
PHASE II	VST EVR System w/o ISD w/ VST Membrane Processor (VR-203-X)[1, 2, 7, d]	TP-201.3[3,4, 8, 9]	N/A	Nozzle Vapor Valve Integrity (Exhibit 10)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 13) Liquid Removal Test (Exhibit 5, Option 2)	VST Hydrocarbon Verification (Exhibit 6) Vapor Pressure Sensor Verification (Exhibit 8) VST Processor Activation (Exhibit 9)	N/A
	VST EVR System w/ ISD w/ VST Membrane Processor (VR-204-X)[1,2, 7, d]	TP-201.3[3,4, 8, 9]	N/A	Nozzle Vapor Valve Integrity (Exhibit 10)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 14) Liquid Removal Rate (Exhibit 5, Option 2)	VST Hydrocarbon Verification (Exhibit 6) Vapor Pressure Sensor Verification (Exhibit 8) VST Processor Activation (Exhibit 9)	ISD Operability Test (Exhibit 13)
	VST EVR System w/o ISD w/ Veeder-Root Vapor Polisher (VR-203-X)[1, 2, 7, d]	TP-201.3[3, 4, 8, 9]	N/A	Nozzle Vapor Valve Integrity (Exhibit 10)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 13) Liquid Removal Rate (Exhibit 5, Option 2)	Vapor Pressure Sensor Verification (Exhibit 8) Vapor Polisher Operability Test (Exhibit 11) Hydrocarbon Verification (Exhibit 12)	N/A
	VST EVR System w/ ISD w/ Veeder-Root Vapor Polisher (VR-204-X)[1, 2, 7, d]	TP-201.3[3, 4, 8, 9]	N/A	Nozzle Vapor Valve Integrity (Exhibit 10)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 14) Liquid Removal Rate (Exhibit 5, Option 2)	Vapor Pressure Sensor Verification (Exhibit 8) Vapor Polisher Operability Test (Exhibit 11) Hydrocarbon Verification (Exhibit 12)	ISD Operability Test (Exhibit 13)
	VST EVR System w/o ISD w/ Hirt Processor (VR-205-X)[1, 2, 7]	TP-201.3[3, 4, 8, 9]	N/A	Nozzle Vapor Valve Integrity (Exhibit 7)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 6) Liquid Removal Rate (Exhibit 5, Option 2)	Hirt VCS 100 Processor Operability Test (Exhibit 8)	N/A
	VST EVR System w/o ISD w/ FFS Clean Air Separator (VR-209-X)[1, 2, 7]	TP-201.3[3, 4, 8, 9]	N/A	Nozzle Vapor Valve Integrity (Exhibit 7)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 6) Liquid Removal Rate (Exhibit 5, Option 2)	Clean Air Separator Integrity Test (Exhibit 4)[11]	N/A

 See Notes on page 2 of Attachment L and Attachment L-1 for instructions and requirements regarding Attachment L.

ATTACHMENT L – INSTRUCTIONS AND REQUIREMENTS

X *and* ***XX*** *represent the most recent California Air Resources Board (CARB) certification of the applicable vapor recovery system.*

[1] *Unless otherwise specified by a District's representative, the tests for the Phase II Vapor Recovery System specified shall be conducted in the following order:*

EVR VST

(VR-203-X/VR-204-X)		***(VR-205-X)***	***(VR-209-X)***
With VST Membrane Processor	***With Veeder-Root Vapor Polisher***	***With Hirt VCS 100 Processor***	***With FFS Clean Air Separator***
TP-201.1E	*TP-201.1E*	*Exhibit 8 of VR-205-X*	*Exhibit 4 of VR-209-X*
TP-201.1B	*TP-201.1B*	*TP-201.1E*	*TP-201.1E*
TP-201.1C or TP-201.1D	*TP-201.1C or TP-201.1D*	*TP-201.1B*	*TP-201.1B*
Exhibit 8 of VR-203-X/VR-204-X	*Exhibit 8 of VR-203-X/VR-204-X*	*TP-201.1C or TP-201.1D*	*TP-201.1C or TP-201.1D*
Exhibit 10 of VR-203-X/VR-204-X	*Exhibit 10 of VR-203-X/VR-204-X*	*Exhibit 7 of VR-205-X*	*Exhibit 7 of VR-209-X*
TP-96-1 and Exhibit 4 of VR-203-X/VR-204-X ***OR***	*TP-96-1 and Exhibit 4 of VR-203-X/VR-204-X* ***OR***	*TP-96-1 and Exhibit 4 of VR-205-X* ***OR***	*TP-96-1 and Exhibit 8 of VR-209-X* ***OR***
TP-201.3 and Exhibit 4 of VR-203-X/VR-204-X	*TP-201.3 and Exhibit 4 of VR-203-X/VR-204-X*	*TP-201.3 and Exhibit 4 of VR-205-X*	*TP-201.3 and Exhibit 8 of VR-209-X*
TP-201.4 (Methodology 1) & Exhibit 13 of VR-203-X/ Exhibit 14 of VR-204-X	*TP-201.4 (Methodology 1) & Exhibit 13 of VR-203-X /Exhibit 14 of VR-204-X*	*TP-201.4 (Methodology 1) & Exhibit 6 of VR-205-X*	*TP-201.4 (Methodology 1) & Exhibit 6 of VR-209-X*
Exhibit 13 of VR-204-X	*Exhibit 13 of VR-204-X*	*Exhibit 5 of VR-205-X*	*Exhibit 5 of VR-209-X*
Exhibit 9 of VR-203-X/VR-204-X	*Exhibit 11 of VR-203-X/VR-204-X*		
Exhibit 6 of VR-203-X/VR-204-X	*Exhibit 12 of VR-203-X/VR-204-X*		
Exhibit 5 of VR-203-X/VR-204-X, Option 2	*Exhibit 5 of VR-203-X/VR-204-X*		

[2] *Test results shall be submitted on current District approved test forms located at http://www.sdapcd.org and maintained onsite.*

[3] *The CARB Test Procedure TP-201.3 (most recent version) shall be conducted between sundown and a half hour after sunrise to minimize interface from solar effects and barometric pressure changes. The San Diego Air Pollution Control District's TP-96-1 (most recent version) leak detection procedure may be used in lieu of TP-201.3. TP-96-1 can be conducted at any time except when daytime temperatures exceed 100°F, and there is direct sunlight on exposed metal vent pipe(s) and metal manhole cover(s) that are in contact with vapor space of the storage tanks. The District will also accept the results of leak tests based on soap solution, helium detection or vacuums provided that procedures have prior written District approval. Election of any test method (including optional tests) requires compliance with the performance standard for the test method.*

[4] *If the equipment is identified as BACT in the equipment description, only TP-96-1 will be accepted by the District.*

[5] *Alternate TP-201.1E may be used in lieu of TP-201.1E when specified by the applicable Executive Order. Once the test has started, the same test shall be completed prior to conducting another test on the P/V Vent Valves (i.e. the results of TP-201.1E cannot be used as part of the Alternate TP-201.1E and vice versa).*

[6] *The P/V valve installed on the VST Membrane processor vent is not part of the Phase I system, and testing of this P/V valve is not required.*

[7] *Within 60 days of any identical dispenser replacement, as defined in District Rule 11, the permittee shall successfully conduct the following performance tests for the new dispenser(s). Any replacement that does not meet the identical definition per District Rule 11 will require an application for an Authority to Construct.*

a. *Nozzle Vapor Valve Integrity Test per Exhibit 10 of ARB E.O. VR-203-X or VR-204-X, Exhibit 7 of ARB E.O. VR-205-X or VR-209-X,* ***OR*** *TP-201.2B.*
b. *Dynamic Back Pressure Performance Test per ARB Test Procedure, TP-201.4, Methodology 1.*
c. *Liquid Removal Test per Exhibit 5 of ARB E.O. VR-203-X, VR-204-X, VR-205-X OR VR-209-X.*
d. *If applicable, Vapor Pressure Sensor Verification Test per Exhibit 8 of ARB E.O. VR-203-X or VR-204-X.*
e. *If ISD is installed, ISD Vapor Flow Meter Operability Test per Exhibit 13 of ARB E.O. VR-204-X.*

The permittee shall promptly record all information relating to the dispenser replacement and performance testing on Attachment I, "Inspection, Maintenance and Repair Log," or an equivalent form. All test results and maintenance logs shall be maintained onsite for three (3) years from the test date and made available to the District upon request.

[8] *Ensure all P/V valves, including the valve installed on the VST Membrane Processor vent, when applicable, have been removed and vent risers capped prior to conducting TP-96-1 and re-install the valves after the test has been completed.*

[9] *The pressure decay test for this system (TP-201.3 or TP-96-1) shall be conducted in conjunction with Exhibit 4 of ARB E.O. VR-203-X, VR-204-X OR VR-205-X, OR Exhibit 8 of ARB E.O. VR-209-X, as applicable.*

[10] For engineering and annual testing, *Exhibits 8 and 10 of VR-203-X or VR-204-X as well as Exhibit 7 of VR-205-X or VR-209-X shall be conducted while the vapor space of the gasoline dispensing facility is pressurized to 2.0" WC. This can be completed in conjunction with the pressure decay test. In addition, TP-201.2B may be used in lieu of Exhibit 10 of VR-203-X or VR-204-X as well as Exhibit 7 of VR-205-X or VR-209-X.*

[11] *If the station pressure is -2.00" wc or more negative, a vacuum test must be performed followed by a pressure test. If the pressure is less negative than -2.00" wc, a pressure test must be performed. Anytime a vacuum test is conducted a subsequent pressure test shall also be conducted immediately after the vacuum test.*

See Notes on Attachment L-1 for continued instructions and requirements regarding Attachment L.

ATTACHMENT L-1
INSTRUCTIONS AND REQUIREMENTS FOR RESPONDING TO ISD ALARMS

Displayed Message	*ISD/PMC Monitoring Category*	*Veeder-Root Indicator Light*	*Cause*	*Troubleshooting Tests/Inspections*[a, d]
ISD VAPOR LEAKAGE WARN	*Containment*	*Yellow*	*7-Day Vapor Leakage Detection test warning*	*TP-96-1, TP-201.1E, TP-201.1C or TP-201.1D, as applicable; Verify the VR Vapor Polisher valve is operating in accordance with Table 6 of Section 16 of VR-204-X IOM*
ISD VAPOR LEAKAGE FAIL	*Containment*	*Red*	*7-Day Vapor Leakage Detection test - 8th consecutive failure*	
ISD GROSS PRESSURE WARN	*Containment*	*Yellow*	*7-Day Gross Over Pressure test warning*	*Check processor ball valve positions, verify processor is in the on and automatic vapor processor mode; Inspect boots for damage; Verify the VR Vapor Polisher valve is operating in accordance with Table 4 of Section 19 of VR-203-X IOM or Table 6 of Section 16 of VR-204-X IOM The following test procedures as listed in ARB E.O. VR-204-X: Exhibit 8, Exhibit 9, Exhibit 11*
ISD GROSS PRESSURE FAIL	*Containment*	*Red*	*7-Day Gross Over Pressure test -8th consecutive failure*	
ISD DEGRD PRESSURE WARN	*Containment*	*Yellow*	*30-Day Degradation Over-Pressure test warning*	
ISD DEGRD PRESSURE FAIL	*Containment*	*Red*	*30-Day Degradation Over-Pressure test - 30th consecutive failure*	
ISD VP PRESSURE WARN[b]	*Processor*	*Yellow*	*1-Day VP Over-Pressure test warning*	
ISD VP PRESSURE FAIL[b]	*Processor*	*Red*	*1-Day VP Over-Pressure test failure – 2nd consecutive failure*	
ISD VP STATUS WARN[c]	*Processor*	*Yellow*	*1-Day Warning of VP Emissions or Duty Cycle*	*See Emissions and Duty Cycle troubleshooting guidelines*
ISD VP STATUS FAIL[c]	*Processor*	*Red*	*1-Day VP Status failure - 2nd consecutive failure*	
VP EMISSION WARN[b, c]	*Processor*	*Yellow*	*1-Day Mass Emission warning*	*The following test procedures as listed in ARB E.O. VR-203-X/VR-204-X: Exhibit 6, Exhibit 9*
VP EMISSION FAIL[b, c]	*Processor*	*Red*	*1-Day Mass Emission failure – 2nd consecutive failure*	
VP DUTY CYCLE WARN[b, c]	*Processor*	*Yellow*	*1-Day Duty Cycle warning*	*TP-96-1, The following test procedures as listed in ARB E.O. VR-203-X/VR-204-X: Exhibit 8, Exhibit 9, Section 16 of VR-203-X IOM (Setup Procedure)*
VP DUTY CYCLE FAIL[b, c]	*Processor*	*Red*	*1-Day Duty Cycle failure – 2nd consecutive failure*	
Hnn: FLOW COLLECT WARN	*Collection*	*Yellow*	*1-Day vapor flow collection warning*	*Inspect boots for damage; TP-201.4, Methodology 1; Exhibit 5 and Exhibit 13 ARB E.O. VR-204-X*
Hnn: FLOW COLLECT FAIL	*Collection*	*Red*	*1-Day vapor flow collection failure - 2nd consecutive failure*	

[a] *Troubleshooting Tests and Inspections also include, but are not limited to, the lists referenced in the Veeder-Root ISD Troubleshooting Manual P/N 577013-819 located at http://www.veeder.com/page/isd_manuals and the VST ISD Troubleshooting Guide 9513-003 located at http://www.vsthose.com/pdf/troubleshooting_guide_1.0b.pdf.*

[b] *Facilities equipped with PMC shall only refer to these alarms. Facilities equipped with ISD shall refer to all alarms listed in the table.*

[c] *Applicable to facilities equipped with a VST Membrane Processor only.*

[d] *The permittee and/or designated contractor shall not clear alarm conditions upon any ISD/PMC alarm unless, at minimum, the applicable troubleshooting tests and inspections listed below have been successfully conducted in order to verify the cause of the ISD/PMC alarm and recorded in the maintenance and repair log. Other tests and/or inspections may be performed in lieu of those cited below provided the same ISD/PMC alarm does not occur within the next consecutive assessment period after resetting the alarm. All test results shall be maintained onsite for three (3) years from test date and made available to the District upon request.*