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

PHASE I		
Vapor Recovery System	**Pressure Decay**	**Phase I**
Phil Tite (VR-101-X)[1, 2, 12] OPW (VR-102-X)[1, 2, 12] CNI (VR-104-X)[1, 2, 12] Emco Wheaton (VR-105-X)[1, 2, 12]	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]

PHASE II WITHOUT ISD			
Vapor Recovery System	**Pressure Decay**	**Phase II Hanging Hardware**	**Phase II Processor**
Veeder-Root Vapor Polisher (VR-203-X)[1, 2, 7, 12, d]	TP-201.3[3, 4, 8, 9]	Nozzle Vapor Valve Integrity (Exhibit 7)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 6) Liquid Removal Rate (Exhibit 5, Option 2)	Vapor Pressure Sensor Verification (Exhibit 10) Vapor Polisher Operability Test (Exhibit 11) Hydrocarbon Verification (Exhibit 12)
Hirt Processor (VR-203-X)[1, 2, 7, 12]	TP-201.3[3, 4, 8, 9]	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 13)
FFS Clean Air Separator (VR-203-X)[1, 2, 7, 12]	TP-201.3[3, 4, 8, 9]	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 14)[11]

PHASE II WITH ISD				
Vapor Recovery System	**Pressure Decay**	**Phase II Hanging Hardware**	**Phase II Processor**	**Phase II ISD**
VST Membrane Processor (VR-204-X)[1,2, 7, 12, d]	TP-201.3[3,4, 8, 9]	Nozzle Vapor Valve Integrity (Exhibit 7)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 6) Liquid Removal Rate (Exhibit 5, Option 2)	VST Hydrocarbon Verification (Exhibit 8) Vapor Pressure Sensor Verification (Exhibit 10) VST Processor Activation (Exhibit 9)	ISD Operability Test (Exhibit 17)
Veeder-Root Vapor Polisher (VR-204-X)[1, 2, 7, 12, d]	TP-201.3[3, 4, 8, 9]	Nozzle Vapor Valve Integrity (Exhibit 7)[10] Dynamic Back Pressure (TP-201.4, Method 1 & Exhibit 6) Liquid Removal Rate (Exhibit 5, Option 2)	Vapor Pressure Sensor Verification (Exhibit 10) Vapor Polisher Operability Test (Exhibit 11) Hydrocarbon Verification (Exhibit 12)	ISD Operability Test (Exhibit 17)
FFS Clean Air Separator (VR-204-X)[1, 2, 7, 12, d]	TP-201.3[3, 4, 8, 9]	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 14)[11]	Vapor Pressure Sensor Verification (Exhibit 10) ISD Operability Test (Exhibit 17)
Hirt Processor (VR-208-X)[1, 2. 7, 12, d]	TP-201.3[3, 4, 8, 9]	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)	ISD Flow Meter Operability Test (Exhibit 10) ISD Pressure Sensor Verification Test (Exhibit 11)

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

ATTACHMENT L – INSTRUCTIONS AND REQUIREMENTS

[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:*

VST Membrane Processor (VR-203-X /VR-204-X)	***Veeder-Root Vapor Polisher (VR-203-X /VR-204-X)***	***Hirt VCS 100 Processor (VR-203-X)***	***FFS Clean Air Separator (VR-203-X /VR-204-X)***	***Hirt VCS 100 Processor (VR-208-X)***
TP-201.1E	*TP-201.1E*	*Exhibit 13*	*Exhibit 14*	*Exhibit 8*
TP-201.1B	*TP-201.1B*	*TP-201.1E*	*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*	*TP-201.1B*
Exhibit 10	*Exhibit 10*	*TP-201.1C or TP-201.1D*	*TP-201.1C or TP-201.1D*	*TP-201.1C or TP-201.1D*
Exhibit 7	*Exhibit 7*	*Exhibit 7*	*Exhibit 10*	*Exhibit 11*
TP-96-1 and Exhibit 4 ***OR*** *TP-201.3 and Exhibit 4*	*TP-96-1 and Exhibit 4* ***OR*** *TP-201.3 and Exhibit 4*	*TP-96-1 and Exhibit* ***OR*** *TP-201.3 and Exhibit 4*	*Exhibit 7*	*Exhibit 7*
TP-201.4 (Methodology 1) & Exhibit 6 of VR-204-X	*TP-201.4 (Methodology 1) & Exhibit 6*	*TP-201.4 (Methodology 1) & Exhibit 6*	*TP-96-1 and Exhibit 4* ***OR*** *TP-201.3 and Exhibit 4*	*TP-96-1 and Exhibit 4* ***OR*** *TP-201.3 and Exhibit 4*
Exhibit 17	*Exhibit 17*	*Exhibit ,5 Option 2*	*TP-201.4 (Methodology 1) & Exhibit 6*	*TP-201.4 (Methodology 1) & Exhibit 6*
Exhibit 8	*Exhibit 11*		*Exhibit 5, Option 2*	*Exhibit 5, Option 2*
Exhibit 5, Option 2	*Exhibit 12*		*Exhibit 17*	*Exhibit 10*
Exhibit 9 of VR-204-X	*Exhibit 5, Option 2*			

[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 ℉, 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 7 of ARB E.O. VR-203-X, VR-204-X, VR-208-X* ***OR*** *TP-201.2B.*
- *b. Dynamic Back Pressure Performance Test per ARB Test Procedure, TP-201.4, Methodology 1 and Exhibit 6 of VR-203-X, VR-204-X or VR-208-X.*
- *c. Liquid Removal Test per Exhibit 5 of ARB E.O. VR-203-X, VR-204-X or VR-208-X, Option 2.*
- *d. If applicable, Vapor Pressure Sensor Verification Test per Exhibit 10 of ARB E.O. VR-203-X or VR-204- or Exhibit 11 of ARB E.O. VR-208-X..*
- *e. If ISD is installed, ISD Vapor Flow Meter Operability Test per Exhibit 17 of ARB E.O. VR-204-X or Exhibit 10 of ARB E.O. VR-208-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-208-X.*

[10] *For engineering and annual testing, Exhibits 7 and 10 of VR-203-X or VR-204-X and Exhibits 7 and 11 of VR-208-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 7 of VR-203-X, VR-204-X or VR-208-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.*

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

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

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

Veeder-Root In-Station Diagnostic (ISD) and Pressure Management Control (PMC) Alarm Troubleshooting Summary

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; Exhibits 10 & 14 of VR-204-X, Verify the VR Vapor Polisher valve is operating in accordance with Table 6 of Section 12 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 6 of Section 12 of VR-204-X IOM The following test procedures as listed in ARB E.O. VR-204-X: Exhibit 9, Exhibit 10, & 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 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]	*Processor*	*Yellow*	*1-Day Mass Emission warning*	*<u>Vapor Polisher</u> 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 15 of VR-203-X IOM or Table 6 of Section 12 of VR-204-X IOM The following test procedures as listed in ARB E.O. VR-203-X/VR-204-X: Exhibit 9, Exhibit 10, and Exhibit 11 <u>VST</u> The following test procedures as listed in ARB E.O. VR-203-X/VR-204-X: Exhibit 8, Exhibit 9 & Exhibit 11*
VP EMISSION FAIL[b]	*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 9, Exhibit 10, Section 12 of VR-204-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 6; Exhibit 5, Option 2 and Exhibit 17 ARB E.O. VR-204-X*
Hnn: FLOW COLLECT FAIL	*Collection*	*Red*	*1-Day vapor flow collection failure - 2nd consecutive failure*	
PMC Sensor Fault/ Communication Alarm[b]	*Self-Test*	*Yellow*	*Component failed or reported error condition*	*See Table 5 found in Section 15 of IOM for VR-203-X*
PMC Setup[b]	*Self-Test*	*Red*	*Component missing or not configured*	*PMC Setup Diagnostic Checklist in Troubleshooting Section, found in Section 15 of IOM for VR-203-X*

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

INCON In-Station Diagnostic (ISD) Alarm Troubleshooting Summary

INCON Vapor Recovery Monitor (VRM)	***Type***	***Cause***	***Troubleshooting Tests/Inspection*** [a, d]
Daily Vapor Collection, Fueling Point (n)	*Warning*	*1-Day Gross A/L Test warning*	*Inspect boots for damage; The following test procedure as listed in ARB E.O. VR-208-X TP-201.4, Methodology 1 & Exhibit 6; Exhibit 5, Option 2 & Exhibit 10*
	Failure	*1-Day Gross A/L Test - 2nd consecutive failure*	
Weekly Ullage Pressure	*Warning*	*7-Day Gross Over Pressure test warning*	*Perform a check on the processor and make sure it is turned on and processing vapors; Check processor ball valve positions; Inspect boots for damage; Exhibits 11 and 8 of VR-208-X*
	Failure	*7-Day Gross Over Pressure test -8th consecutive failure*	
Monthly Ullage Pressure	*Warning*	*30-Day Degradation Over Pressure test warning*	
	Failure	*30-Day Degradation Over Pressure test - 30th consecutive failure*	
Weekly Ullage Pressure Leak Test	*Warning*	*7-Day Vapor Leakage Detection test warning*	*TP-96-1, TP-201.1E, TP-201.1C or TP-201.1D, as applicable; Exhibits 8 & 11 of VR-208-X*
	Failure	*7-Day Vapor Leakage Detection test - 8th consecutive failure*	
Vapor Processor Warning	*Warning Only*	*Processor run time exceeds 62 continuous minutes, or processor is shutoff, or input to ISD console is disconnected*	*Exhibit 8 of ARB E.O. VR-208-X TP-96-1*
Vapor Processor Malfunction	*Warning*	*1-Day Over Pressure test warning*	*Exhibit 8 of ARB E.O. VR-208-X TP-96-1*
	Failure	*1-Day Over Pressure test - 2nd consecutive failure*	

Alarm Troubleshooting Summary For Hirt VCS 100 Processor

VCS 100 Indicator Panel	***Light***	***Cause***	***Troubleshooting Tests/Inspections*** [d]
OVERPRESSURE LIGHT	*Red*	*UST ullage pressure is positive for at least 1 continuous hour.*	*GDF Owner/Operator Responsibilities: Sections 5 & 8 of VR-208-X IOM Exhibit 7 of E.O. VR-208-X Certified Contractor Responsibilities: Follow VCS 100 Troubleshooting Guide* [e] *TP-96-1 Exhibit 8 of E.O. VR-208-X*

[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, the VST ISD Troubleshooting Guide located at http://www.vsthose.com/carbs_components.aspx, and the INCON VRM Troubleshooting and Diagnostics Guide located at http://www.franklinfueling.com.*

[b] *Facilities equipped with only PMC shall refer to these alarms. Facilities equipped with ISD shall refer to all alarms listed in the table, excluding the PMC Sensor Fault & PMC Setup alarms.*

[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/PROCESSOR alarm unless, at minimum, the applicable troubleshooting tests and inspections listed above have been successfully conducted in order to verify the cause of the ISD/PMC/PROCESSOR alarm and recorded in the maintenance and repair log. Other tests and/or inspections may be performed in lieu of those cited above provided the same ISD/PMC/PROCESSOR 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.*

[e] *Contact Hirt by either Phone: (562) 692-6970 or by email: HirtVCS@aol.com to order the guide.*