

Executive Order VR-204-N IOM Section 4: ISD Alarm Troubleshooting Summary

Due to the number of hanging hardware and vapor processor configurations available for use with the VST Phase II EVR Balance system, this section of the IOM consists of the following tables. The content of each table differs based on the type of processor and hanging hardware installed:

- Table 1: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with VST ECS Membrane
- Table 2: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with Veeder-Root Vapor Polisher
- Table 3: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with FFS Healy Clean Air Separator
- Table 4: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with Hirt VCS-100 Thermal Oxidizer
- Table 5: Veeder-Root Alarms Associated with Veeder-Root Wireless ISD Components
- Table 6: INCON ISD Alarm Troubleshooting Summary for Facilities Equipped with VST Phase II EVR System and FFS Healy Clean Air Separator
- Table 7: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with VST Green Machine Processor

Table 1: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with VST ECS Membrane

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD VAPOR LEAKAGE WARN	Containment	Yellow	Containment system leaks at 2 times the TP-201.3 standard.	<ul style="list-style-type: none"> • Exhibit 4 • TP-201.3 (or equivalent test procedure)
ISD VAPOR LEAKAGE FAIL ²	Containment	Red	8 th Consecutive Failure of Pressure Integrity (Vapor Leak) Test	
ISD GROSS PRESSURE WARN	Containment	Yellow	95 th percentile of 7-days' ullage pressure exceeds 1.3 Inches Water Column (IWC).	<ul style="list-style-type: none"> • Exhibit 9 • Exhibit 10
ISD GROSS PRESSURE FAIL ²	Containment	Red	8 th Consecutive Failure of Gross Containment Pressure Test	
ISD DEGRD PRESSURE WARN	Containment	Yellow	75 th percentile of 30-days' ullage pressure exceeds 0.3 IWC.	
ISD DEGRD PRESSURE FAIL ²	Containment	Red	31 st Consecutive Failure of Degradation Pressure Test	
FLOW COLLECT WARN	Collection	Yellow	Vapor collection flow performance is less than 50%.	<ul style="list-style-type: none"> • Exhibit 5 • Exhibit 6 • Exhibit 17 • TP-201.4 (or equivalent test procedure)
FLOW COLLECT FAIL ²	Collection	Red	2 nd Consecutive Failure of Vapor Collection Flow Performance Monitoring Test	
VP EMISSION WARN ^{3,4}	Processor	Yellow	Mass emission exceeded the certified threshold.	<ul style="list-style-type: none"> • Exhibit 8 • Exhibit 9
VP EMISSION FAIL ^{3,4}	Processor	Red	2 nd Consecutive Mass emission test failure.	

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
VP DUTY CYCLE WARN ³	Processor	Yellow	Duty cycle exceeds 18 hours per day or 75% of 24 hours.	<ul style="list-style-type: none"> • PMC Setup Procedure • Exhibit 4 • Exhibit 9 • Exhibit 10 • TP-201.3 (or equivalent test procedure)
VP DUTY CYCLE FAIL	Processor	Red	2 nd Consecutive Duty Cycle Test Failure.	
ISD SENSOR OUT WARN	Self-Test	Yellow	Failure of Sensor Self-Test	<ul style="list-style-type: none"> • Confirm ISD sensor & module installation / communication per VR 204 IOM Section 12, Chapter 2
ISD SENSOR OUT FAIL	Self-Test	Red	8 th Consecutive Failure of Sensor Self-Test	
ISD SETUP WARN	Self-Test	Yellow	Failure of Setup Test	<ul style="list-style-type: none"> • Confirm EVR/ISD programming per VR 204 IOM Section 12
ISD SETUP FAIL ²	Self-Test	Red	8 th Consecutive Failure of Setup Test	
PMC SETUP FAIL	N/A	Red	PMC is not configured or missing components.	<ul style="list-style-type: none"> • Troubleshooting Guide http://www.vsthose.com/carbs_components.a_spx • See ISD Troubleshooting Guide, P/N 577013-819. • Exhibit 8 • Exhibit 9
PMC SENSOR FAULT	N/A	Red	Component used by PMC has failed or reported an error condition. See Trouble shooting section for complete description of sensors and associated conditions that can cause a sensor fault.	<ul style="list-style-type: none"> • Check for Smart Sensor Device Alarm or Fault.

Note: The alarms listed in above table will also activate an audible alarm

¹See ISD Troubleshooting Manual P/N 577013-819 found at <http://www.veeder.com/object/577013-819.html> and the VST ISD Troubleshooting Guide 9513-003 found at http://www.vsthose.com/pdf/Troubleshooting_Guide_ECS_Membrane_Processor_Sept_2010.pdf

²ISD Shut Down Alarms – see Figure 48 of IOM Section 12

³This warning will result in an ISD VP Status Warn

⁴This failure will result in an ISD VP Status Fail

Table 2: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with Veeder-Root Vapor Polisher

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD VAPOR LEAKAGE WARN	Containment	Yellow	Containment system leaks at 2 times the TP-201.3 standard.	<ul style="list-style-type: none"> • Exhibit 4 • Exhibit 11 • TP-201.3 (or equivalent test procedure)
ISD VAPOR LEAKAGE FAIL ²	Containment	Red	8 th Consecutive Failure of Pressure Integrity (Vapor Leak) Test	
ISD GROSS PRESSURE WARN	Containment	Yellow	95 th percentile of 7-days' ullage pressure exceeds 1.3 IWC.	<ul style="list-style-type: none"> • Exhibit 10 • Exhibit 11
ISD GROSS PRESSURE FAIL ²	Containment	Red	8 th Consecutive Failure of Gross Containment Pressure Test	
ISD DEGRD PRESSURE WARN	Containment	Yellow	75 th percentile of 30-days' ullage pressure exceeds 0.3 IWC.	
ISD DEGRD PRESSURE FAIL ²	Containment	Red	31 st Consecutive Failure of Degradation Pressure Test	
FLOW COLLECT WARN	Collection	Yellow	Vapor collection flow performance is less than 50%.	<ul style="list-style-type: none"> • Exhibit 5 • Exhibit 6 • Exhibit 17 • TP-201.4 (or equivalent test procedure)
FLOW COLLECT FAIL ²	Collection	Red	2 nd Consecutive Failure of Vapor Collection Flow Performance Monitoring Test	
VP EMISSION WARN ^{3,4}	Processor	Yellow	Mass emission exceeded the certified threshold.	<ul style="list-style-type: none"> • Exhibit 11 • Exhibit 12
VP EMISSION FAIL ^{3,4}	Processor	Red	2 nd Consecutive Mass emission test failure.	

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD SENSOR OUT WARN	Self-Test	Yellow	Failure of Sensor Self-Test	<ul style="list-style-type: none"> • Confirm ISD sensor & module installation / communication per VR 204 IOM Section 12, Chapter 2
ISD SENSOR OUT FAIL	Self-Test	Red	8 th Consecutive Failure of Sensor Self-Test	
ISD SETUP WARN	Self-Test	Yellow	Failure of Setup Test	<ul style="list-style-type: none"> • Confirm EVR/ISD programming per VR 204 IOM Section 12
ISD SETUP FAIL ²	Self-Test	Red	8 th Consecutive Failure of Setup Test	
PMC SETUP FAIL	N/A	Red	PMC is not configured or missing components.	<ul style="list-style-type: none"> • Ensure that all required components are installed and operational.
PMC SENSOR FAULT	N/A	Red	Component used by PMC has failed or reported an error condition. See Troubleshooting section for complete description of sensors and associated conditions that can cause a sensor fault.	<ul style="list-style-type: none"> • Check for Smart Sensor Device Alarm or Fault.

Note: The alarms listed in above table will also activate an audible alarm

¹See ISD Troubleshooting Manual P/N 577013-819 at <http://www.veeder.com/object/577013-819.html>

²ISD Shut Down Alarms - see Figure 48 of IOM Section 12

³This warning will result in an ISD VP Status Warn

⁴This failure will result in an ISD VP Status Fail

Table 3: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with FFS Healy Clean Air Separator

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD VAPOR LEAKAGE WARN	Containment	Yellow	Containment system leaks at 2 times the TP-201.3 standard.	<ul style="list-style-type: none"> • Exhibit 4 • Exhibit 14 • TP-201.3 (or equivalent test procedure)
ISD VAPOR LEAKAGE FAIL ²	Containment	Red	8 th Consecutive Failure of Pressure Integrity (Vapor Leak) Test	
ISD GROSS PRESSURE WARN	Containment	Yellow	95 th percentile of 7-days' ullage pressure exceeds 1.3 IWC.	<ul style="list-style-type: none"> • Are ball valves for the Clean Air Separator in the correct position per Exhibit 2? • Exhibit 10
ISD GROSS PRESSURE FAIL ²	Containment	Red	8 th Consecutive Failure of Gross Containment Pressure Test	
ISD DEGRD PRESSURE WARN	Containment	Yellow	75 th percentile of 30-days' ullage pressure exceeds 0.3 IWC.	
ISD DEGRD PRESSURE FAIL ²	Containment	Red	31 st Consecutive Failure of Degradation Pressure Test	
FLOW COLLECT WARN	Collection	Yellow	Vapor collection flow performance is less than 50%.	<ul style="list-style-type: none"> • Exhibit 5 • Exhibit 6 • Exhibit 17 • TP-201.4 (or equivalent test procedure)
FLOW COLLECT FAIL ²	Collection	Red	2 nd Consecutive Failure of Vapor Collection Flow Performance Monitoring Test	
ISD SENSOR OUT WARN	Self-Test	Yellow	Failure of Sensor Self-Test	<ul style="list-style-type: none"> • Confirm ISD sensor & module installation / communication per VR 204 IOM Section 12, Chapter 2
ISD SENSOR OUT FAIL	Self-Test	Red	8 th Consecutive Failure of Sensor Self-Test	

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD SETUP WARN	Self-Test	Yellow	Failure of Setup Test	<ul style="list-style-type: none"> Confirm EVR/ISD programming per VR 204 IOM Section 12
ISD SETUP FAIL ²	Self-Test	Red	8 th Consecutive Failure of Setup Test	
<p>Note: The alarms listed in above table will also activate an audible alarm</p> <p>¹See ISD Troubleshooting Manual P/N 577013-819 at http://www.veeder.com/object/577013-819.html</p> <p>²ISD Shut Down Alarms - see Figure 48 of IOM Section 12</p>				

Table 4: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with Hirt VCS-100 Thermal Oxidizer

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD VAPOR LEAKAGE WARN	Containment	Yellow	Containment system leaks at 2 times the TP-201.3 standard.	<ul style="list-style-type: none"> Exhibit 4 TP-201.3 (or equivalent test procedure)
ISD VAPOR LEAKAGE FAIL ²	Containment	Red	8 th Consecutive Failure of Pressure Integrity (Vapor Leak) Test	
ISD GROSS PRESSURE WARN	Containment	Yellow	95 th percentile of 7-days' ullage pressure exceeds 1.3 IWC.	<ul style="list-style-type: none"> Exhibit 10 Exhibit 13
ISD GROSS PRESSURE FAIL ²	Containment	Red	8 th Consecutive Failure of Gross Containment Pressure Test	
ISD DEGRD PRESSURE WARN	Containment	Yellow	75 th percentile of 30-days' ullage pressure exceeds 0.3 IWC.	
ISD DEGRD PRESSURE FAIL ²	Containment	Red	31 st Consecutive Failure of Degradation Pressure Test	
FLOW COLLECT WARN	Collection	Yellow	Vapor collection flow performance is less than 50%.	<ul style="list-style-type: none"> Exhibit 5 Exhibit 6 Exhibit 17 TP-201.4 (or equivalent test procedure)
FLOW COLLECT FAIL ²	Collection	Red	2 nd Consecutive Failure of Vapor Collection Flow Performance Monitoring Test	
ISD VP PRESSURE WARN	Processor	Yellow	90 th percentile of 1-day ullage pressure exceeds 2.3 IWC.	<ul style="list-style-type: none"> Exhibit 13
ISD VP PRESSURE FAIL ²	Processor	Red	2 nd Consecutive Failure of Vapor Processor Overpressure Test	

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD VP STATUS WARN	Processor	Yellow	Triggered by an active "Extern Input Alarm" due to power loss, communication loss, or processor run time > 62 consecutive minutes	<ul style="list-style-type: none"> Exhibit 4 TP-201.3 (or equivalent test procedure) Confirm proper installation of Hirt VCS 100 per VR 204 IOM Section 12, Chapter 2
ISD SENSOR OUT WARN	Self-Test	Yellow	Failure of Sensor Self-Test	<ul style="list-style-type: none"> Confirm ISD sensor & module installation / communication per VR 204 IOM Section 12, Chapter 2
ISD SENSOR OUT FAIL	Self-Test	Red	8 th Consecutive Failure of Sensor Self-Test	
ISD SETUP WARN	Self-Test	Yellow	Failure of Setup Test	<ul style="list-style-type: none"> Confirm EVR/ISD programming per VR 204 IOM Section 12
ISD SETUP FAIL ²	Self-Test	Red	8 th Consecutive Failure of Setup Test	
<p>Note: The alarms listed in above table will also activate an audible alarm</p> <p>¹See ISD Troubleshooting Manual P/N 577013-819 at http://www.veeder.com/object/577013-819.html</p> <p>²ISD Shut Down Alarms - see figure 48 of IOM Section 12</p>				

Table 5: Alarms Associated with Veeder-Root Wireless Components

Displayed Message	Device	Light Indicator	Description	Suggested Troubleshooting
Battery Warning	Vapor Valve, Vapor Flow Meter	Yellow	Device transmitter reports battery status as "Replace" for 24 hours.	Remove and replace battery.

Note: The alarm listed in above table will also activate an audible alarm

Table 6: INCON ISD Alarm Troubleshooting Summary for Facilities Equipped with VST Phase II EVR System and FFS Healy Clean Air Separator

Device	Description	Category	Type	Definition	Possible Cause and Solution
Fueling Point [n]	Daily Vapor Collection ¹	VRM	Warning or Alarm	This Vapor Recovery alarm occurs when the vapors being return to the UST are blocked. The alarm will occur at the assessment time that was set in the VRM Programming.	May be caused by leaking hanging hardware, blocked hoses or vapor recovery lines, jammed flow meter. Check for leaks by viewing the vanes through the site glass on the VFM, conduct Exhibit 6, or conduct Exhibit 19 of VR-204 to verify a blockage.
	Weekly or Monthly Ullage Pressure ¹	VRM	Warning or Alarm	This vapor recovery alarm occurs when the UST ullage pressure exceeds the alarm threshold for the time period specified in the alarm.	Check if ball valves for the Clean Air Separator in the correct position per Exhibit 2, or conduct Exhibit 20 (vapor pressure sensor),
	Weekly Ullage Pressure Leak Test ¹	VRM	Warning or Alarm	This vapor recovery alarm occurs when the Vapor Recovery Monitor determines a leak greater than the allowable.	May occur when there is an excessive leak in the vapor recovery containment area. Perform a pressure decay test per TP-201.3.
Channel [n]	Missing	VRM	Alarm	A flow meter is not connected or there is an open circuit in the wiring. This will only occur for a flow meter channel that is programmed to have a flow meter.	Check the connection. Measure the voltage of the terminals, which should be approximately 18Vdc.
Channel [n]	Error	VRM	Alarm	The Vapor Recovery Monitor does not understand the data transmission.	This may happen when a channel is programmed for a magnetostrictive (intake) probe but has a vapor flow meter connected instead.
	Pressure Sensor Open Circuit	VRM	Alarm	The pressure sensor is not connected to the Vapor Recovery Monitor.	Usually due to a bad connection or a broken wire. In some cases the sensor may not be working. First check the connections inside the dispenser junction box then at the Console terminal block. Second, measure the voltage at the terminal blocks and verify the voltage.
DIM Module	Module number mismatch	System	Alarm	DIM module detected does not match the number programmed	Check that the number of DIM modules installed matches the number programmed under System Configuration > Modules Expected. If problem persists, contact FFS Technical Services for support.

Device	Description	Category	Type	Definition	Possible Cause and Solution
TS-DIM	Connection Down	VRM	Alarm	The TS-DIMB is not receiving communications from the dispensers	Refer to the Vapor Recovery Monitoring Alarm and Troubleshooting identification guide 000-0529 for troubleshooting help.
	External ATG Connection Down	VRM	Alarm	No communication or bad communication between the ATG and the Console.	Check the comm. Port settings in both the ATG and the Console. These comm. Port settings should match. Make sure there is a straight serial cable between the ATG and the Console.
Slot [n]	[i] Module is offline, where i is the module number	System	Alarm	Occurs when a module is not communicating with the controller.	If RED LED is on or Green LED is blinking try cycling power.
	[i] Module number mismatch, where i is the module number	System	Alarm	Occurs when the number of modules does not match the programmed number of modules.	Check the setup at System Configuration» Modules Expected to see if the correct numbers are programmed.
	System Bus Error	System	Alarm	The communication bus is not working properly.	Check to see if a particular module has a red Error LED. If so try to trouble shoot the bad module. Also try removing the bad module and see if the alarm goes away.
TS-DTUn	Remote DTU is Offline	System	Alarm	A remote DTU is not communicating to the console DTU.	Wrong ID Number Dispenser Powered Off Not installed correctly Not on same phase voltage as console DTU
	Console DTU number mismatch	System	Alarm	The console DTU is not communicating with the console.	Bad bus connection Not powered
	DTU FFS Interference	System	Alarm	Two networks have the same Network ID	Change Network ID
Printer	Check Thermal Printer	System	Warning	Printer is out of paper, or the printer door is open.	Make sure the printer has paper, and the printer door is closed completely.
	Printer Head Temperature	System	Warning	Print head high temperature (65 °C) persists for at least 2 minutes.	Printer will resume printing and the alarm will clear after a short cool-down period. Keep the console area cool and ventilated. If the alarm does not clear, contact FFS Technical Support.
	Printer Paper Jam	System	Warning	Indicates that paper is jammed in the printer	Carefully lift printer cover to inspect and remove jammed paper.

¹ ISD Shutdown Alarm

Table 7: Veeder-Root ISD Alarm Troubleshooting Summary for Facilities Equipped with VST Green Machine Processor

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD VAPOR LEAKAGE WARN	Containment	Yellow	Containment system leaks at 2 times the TP-201.3 standard.	<ul style="list-style-type: none"> Exhibit 4 TP-201.3 (or equivalent test procedure)
ISD VAPOR LEAKAGE FAIL ²	Containment	Red	8 th Consecutive Failure of Pressure Integrity (Vapor Leak) Test	
ISD GROSS PRESSURE WARN	Containment	Yellow	95 th percentile of 7-days' ullage pressure exceeds 1.3 IWC.	<ul style="list-style-type: none"> Exhibit 9 Exhibit 10
ISD GROSS PRESSURE FAIL ²	Containment	Red	8 th Consecutive Failure of Gross Containment Pressure Test	
ISD DEGRD PRESSURE WARN	Containment	Yellow	75 th percentile of 30-days' ullage pressure exceeds 0.3IWC.	
ISD DEGRD PRESSURE FAIL ²	Containment	Red	31 st Consecutive Failure of Degradation Pressure Test	
FLOW COLLECT WARN	Collection	Yellow	Vapor collection flow performance is less than 50%.	<ul style="list-style-type: none"> Exhibit 5 Exhibit 6 Exhibit 17 TP-201.4 (or equivalent test procedure)
FLOW COLLECT FAIL ²	Collection	Red	2 nd Consecutive Failure of Vapor Collection Flow Performance Monitoring Test	
VP EMISSION WARN ^{3,4}	Processor	Yellow	Mass emission exceeded the certified threshold.	<ul style="list-style-type: none"> Troubleshooting Manual www.vsthose.com. Exhibit 9
VP EMISSION FAIL ^{3,4}	Processor	Red	2 nd Consecutive Mass emission test failure.	

Displayed Message	ISD Monitoring Category	Light Indicator	Description	Suggested Troubleshooting ¹
ISD SENSOR OUT WARN	Self-Test	Yellow	Failure of Sensor Self-Test	<ul style="list-style-type: none"> • Confirm ISD sensor & module installation / communication per VR 204 IOM Section 12, Chapter 2
ISD SENSOR OUT FAIL	Self-Test	Red	8 th Consecutive Failure of Sensor Self-Test	
ISD SETUP WARN	Self-Test	Yellow	Failure of Setup Test	<ul style="list-style-type: none"> • Confirm EVR/ISD programming per VR 204 IOM Section 12
ISD SETUP FAIL ²	Self-Test	Red	8 th Consecutive Failure of Setup Test	
PMC SETUP FAIL	N/A	Red	PMC is not configured or missing components	<ul style="list-style-type: none"> • See ISD Troubleshooting Manual
PMC SENSOR FAULT	N/A	Red	Component used by PMC has failed or reported an error condition. See Troubleshooting section for complete description of sensors and associated conditions that can cause a sensor fault.	<ul style="list-style-type: none"> • Troubleshooting Manual www.vsthose.com • Exhibit 9

Note: The alarms listed in above table will also activate an audible alarm

¹ See ISD Troubleshooting Manual P/N 577013-819 found at <http://www.veeder.com/object/577013-819.html> and the VST ISD Troubleshooting Manual found at http://www.vsthose.com/pdf/Troubleshooting_Manual_Green_Machine.pdf

² ISD Shut Down Alarms – see Figure 48 of IOM Section 12

³ This warning will result in an ISD VP Status Warn

⁴ This failure will result in an ISD VP Status Fail