Healy Enhanced Vapor Recovery Troubleshooting Guide
Contents

Important Safety Messages .................................................................................................................................................................................................................................3
References .................................................................................................................................................................................................................................................3
Introduction to the Guide ..................................................................................................................................................................................................................4
Requirement Notes ......................................................................................................................................................................................................................4
Introduction to ISD Vapor Collection .....................................................................................................................................................................................................5
   Figure 1: ISD V/L Transaction Graph ..................................................................................................................................................................................................5
   Table 1: ISD Vapor Collection Terminology .................................................................................................................................................................5
   Identifying Collection Alarms ..................................................................................................................................................................................................6
   Section One: Weekly Vapor Collection Alarms ....................................................................................................................................................................7
      Introduction to Weekly Vapor Collection Alarms ..........................................................................................................................................................7
      Warning Alarms ................................................................................................................................................................................................................7
      Failure Alarms ....................................................................................................................................................................................................................7
      Course of Action ........................................................................................................................................................................................................7
      Troubleshooting ............................................................................................................................................................................................................8
   Section Two: Daily Vapor Collection Alarms .....................................................................................................................................................................9
      Introduction to Daily Vapor Collection Alarms ..........................................................................................................................................................9
      Warning Alarms .............................................................................................................................................................................................................9
      Failure Alarms ...........................................................................................................................................................................................................9
      BLKD Alarms .........................................................................................................................................................................................................9
      Course of Action .........................................................................................................................................................................................................9
      Troubleshooting .......................................................................................................................................................................................................10
   Troubleshooting ..............................................................................................................................................................................................................21-22
   Failure Alarms .............................................................................................................................................................................................................20
   Warning Alarms ........................................................................................................................................................................................................17

Introduction to ISD Ullage Pressure ......................................................................................................................................................................................................12
   Figure 2: Ullage Pressure Graph ................................................................................................................................................................................................12
   Table 2: ISD Ullage Pressure Terminology .....................................................................................................................................................................12
   Identifying Pressure Alarms ................................................................................................................................................................................................13
   Section Three: Monthly Ullage Pressure Alarms ......................................................................................................................................................14
      Introduction to Monthly Ullage Pressure Alarms ................................................................................................................................................14
      Warning Alarms ........................................................................................................................................................................................................14
      Failure Alarms ........................................................................................................................................................................................................14
      Course of Action .......................................................................................................................................................................................................14
      Troubleshooting .......................................................................................................................................................................................................15-16
   Section Four: Weekly Ullage Pressure Alarms ......................................................................................................................................................17
      Introduction to Weekly Ullage Pressure Alarms ................................................................................................................................................17
      Warning Alarms ........................................................................................................................................................................................................17
      Failure Alarms ........................................................................................................................................................................................................17
      Course of Action .......................................................................................................................................................................................................17
      Troubleshooting .......................................................................................................................................................................................................18-19
   Section Five: Ullage Pressure Leak Test Alarms ......................................................................................................................................................20
      Introduction to Ullage Pressure Leak Test Alarms ........................................................................................................................................20
      Warning Alarms ........................................................................................................................................................................................................20
      Failure Alarms ........................................................................................................................................................................................................20
      Course of Action .......................................................................................................................................................................................................20
      Troubleshooting .......................................................................................................................................................................................................21-22

Appendix ........................................................................................................................................................................................................................................23
   Figure 3: INCON ISD Daily Report (Printout) .................................................................................................................................................................23
   Figure 4: INCON ISD Monthly Report (Printout) ......................................................................................................................................................24
   Figure 5: Veeder-Root ISD Daily Report (Printout) ................................................................................................................................................25
   Figure 6: Veeder Root ISD Monthly Report (Printout) ......................................................................................................................................26
   Figure 7: Return Goods Product Tag (FFS-0093) ......................................................................................................................................................27
Important Safety Messages

Please refer to California Air Resources Board (CARB) Installation, Operation, and Maintenance (IOM) manuals within Executive Order VR-202 for proper safety information.

Warning
Always secure the work area from moving vehicles. This equipment is mounted on and in dispensers, which puts service personnel working on this equipment in danger from moving vehicles entering the work area. To help eliminate these unsafe conditions, secure the area by using a service truck to block access to the work environment, or by using any other reasonable means available to ensure the safety of service personnel.

Warning
Follow all federal, state, and local laws governing the installation of this equipment. When no other regulations apply, follow NFPA codes 30A and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

References

Franklin Fueling Systems:
http://www.franklinfueling.com
Tech Support: 1-800-984-6266

California Air Resources Board (CARB)
http://www.arb.ca.gov/vapor/vapor.htm

CARB Phase II EVR Executive Orders
http://www.arb.ca.gov/vapor/eo-evrphasell.htm
   VR-201  Healy EVR Phase II without ISD
   VR-202  Healy EVR Phase II with ISD

CARB Enhanced Vapor Recovery Compliance Guide
http://www.evrhome.org/

CARB Compliance Assistance Programs
http://www.arb.ca.gov/cap/cap.htm
   ISD Handbook
**Introduction to the Guide**

The purpose of this guide is to inform installers, operators, and other personnel about the Healy Enhanced Vapor Recovery (EVR) Phase II System with In-Station Diagnostics (ISD) and how to properly troubleshoot these systems. For complete installation, operation, and maintenance details of this system, refer to CARB Executive Order VR-202.

A Healy EVR Phase II System includes one VP1000 vacuum pump per dispenser, one Clean Air Separator (CAS) per site, and the appropriate Healy hanging hardware, including Model 900 nozzles, at each fueling point.

The VP1000 Vacuum Pump is activated for each transaction and provides the vacuum for the Model 900 nozzle to collect vapors at the vehicle. The CAS is a containment vessel connected with the ullage space of all underground gasoline storage tanks to control ullage pressure.

An ISD system is comprised of one vapor pressure sensor per site, one vapor flow meter per dispenser, one tank gauge console, and the appropriate ISD software for use with the console.

The vapor pressure sensor’s primary purpose is to continually measure the underground storage tank’s vapor containment pressure. This vapor containment area includes the tank ullage area, the vapor piping, and the CAS. ISD continually monitors the vapor pressure sensor and performs assessments for pressurization and leakage in the vapor containment area.

The vapor flow meter is a volume measuring meter. When vapors are returned from a vehicle’s gasoline tank to the underground storage tank during dispensing, the volume is measured and analyzed to assess how well the vapor collection process is working.

**Requirement Notes**

1. Clear/Reset Alarm can only be performed by a certified technician. A maintenance log entry must be made documenting the service and reason for the Clear/Reset Alarm. Clear/Reset Alarm must be performed according to the requirements of the local air district having jurisdiction over the site and CARB Executive Order VR-202.

2. Exhibit 5 Vapor-to-Liquid testing, ISD Vapor Flow Meter Operability testing, Non-ORVR Vehicle Fueling and ORVR Vehicle Fueling must be a minimum of 4½ Gallons per transaction to ensure accurate results.

3. Exhibit 5 Vapor-to-Liquid testing, ISD Vapor Flow Meter Operability testing, Non-ORVR Vehicle Fueling and ORVR Vehicle Fueling must be confirmed with two additional test results if the initial test result is not within the designated range.

4. ORVR Vehicle Fueling readings may not be within the ORVR designated range due to variations in the vehicle fillpipe, such as a cap-less fillpipe or a high-end spout sealing fillpipe or a fillpipe that has been damaged in a collision. These vehicle fillpipe variations can result in ORVR Vehicle Fueling readings in the Non-ORVR Fueling designated range, which should not be deemed a failure of the nozzle, unless confirmed with additional ORVR Vehicle Fueling readings.

5. All nozzle warranty service must be completely documented on a Returned Goods Product Tag (p/n FFS-0093). Additionally, all nozzle warranty service related to Vapor Collection Alarms MUST have the last 3 days of ISD Daily Reports stapled to the Returned Goods Product Tag.
Introduction to ISD Vapor Collection

ISD vapor collection data compares fueling point V/L's (Vapor over Liquid ratios) based on CARB specifications detailed in CP-201. V/L ratio is the amount of vapor collected in comparison to the amount of liquid dispensed. In the Healy Phase II Vapor Recovery System, the certified V/L range is 0.95 to 1.15, as determined by VR-202 Exhibit 5 testing.

If ISD vapor collection data does not meet the appropriate specifications, ISD will produce a warning alarm and then a failure alarm as specified below.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>ISD Report Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Vapor Collection Alarm (Degradation)</td>
<td>V/L average for Non-ORVR transactions is greater than 1.32 or less than 0.81</td>
<td>INCON – Weekly Vapor Collection Warning Alarm / Failure Alarm  VEEDER-ROOT – ISD Degradation Vapor Collection Warning Alarm / Failure Alarm (DGRD)</td>
</tr>
<tr>
<td>Daily Vapor Collection Alarm (Gross)</td>
<td>V/L average for Non-ORVR transactions is greater than 1.90 or less than 0.33</td>
<td>INCON – Daily Vapor Collection Warning Alarm / Failure Alarm  VEEDER-ROOT – ISD Gross Vapor Collection Warning Alarm / Failure Alarm (GROSS)</td>
</tr>
</tbody>
</table>

Note: On-Board Refueling Vapor Recovery (ORVR) equipped vehicles generate fueling point V/L ratios in the 0.15 to 0.50 range. V/L ratios below 0.15 are assessed as no vapor collection by the ISD.
Identifying Collection Alarms

Print an ISD Monthly Report (See Figures 4 & 6 for examples)

Review the Warning Alarm and Failure Alarm sections to determine active alarms

Is an active Weekly Vapor Collection Alarm present?
  Yes → Refer to Section One of this guide
  No → Review maintenance log to determine what actions have been taken to Clear / Reset Alarm or contact FFS Tech Support for further assistance

Is an active Daily Vapor Collection Alarm present?
  Yes → Refer to Section Two of this guide
  No → Review maintenance log to determine what actions have been taken to Clear / Reset Alarm or contact FFS Tech Support for further assistance

Refer to IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202
Section One: Weekly Vapor Collection Alarms

Introduction to Weekly Vapor Collection Alarms
This section of the guide is to inform installers, operators, and other personnel about ISD Weekly Vapor Collection warning and failure alarms. A Weekly Vapor Collection Alarm is an indication that based on a minimum of 30 Non-ORVR transactions the fueling point V/L average is beyond the ISD threshold on a weekly basis. This is usually an indication of a small blockage or small leak in the vapor recovery system.

Warning Alarms
A Weekly Vapor Collection Warning Alarm is activated and recorded when the fueling point V/L average for a minimum of 30 Non-ORVR transactions is greater than 1.32 or less than 0.81 for one week. If fewer than 30 Non-ORVR events occur in a week, the ISD system may accumulate events over an additional day or days until a minimum of 30 Non-ORVR events is reached.

Note: Veeder-Root ISD evaluates “DGRD” alarms on a seven day rolling calendar. INCON ISD evaluates weekly vapor collection alarms on a calendar week basis.

Failure Alarms
When two such consecutive failed assessments occur, ISD will activate a Weekly Vapor Collection Failure Alarm, record that event, and prohibit fuel dispensing from the affected fueling point(s).

Note: With Veeder-Root ISD if no action is taken to correct a “DGRD” issue, the Veeder-Root ISD will post a “DGRD” warning alarm on day 7 through day 13 and then post the shutdown “DGRD” failure alarm on day 14. The entire site will be shutdown in the event of a “DGRD” failure alarm. With INCON ISD, a warning alarm will be posted on calendar day 7 and then post the failure alarm on calendar day 14 with a shutdown of only the affected dispensers if no action is taken to correct.

Course of Action

1. Print an ISD Daily Report from the last 7 days. (see Figures 3 & 5 for examples)
2. Review daily averages from reports on fueling points with active alarms
3. Is the V/L averaging greater than 1.32 for one week?
   - Yes: This could be an indicator of a small leak in the dispenser vapor piping or hanging hardware, pushing Non-ORVR transactions over the ISD upper limit.
     - Continue to the troubleshooting section on the following page
   - No: Contact FFS Tech Support for further assistance
4. Is the V/L averaging less than 0.81 for one week?
   - Yes: This could be an indicator of a small blockage in the dispenser vapor piping or hanging hardware, limiting Non-ORVR transactions below the ISD lower limit. This could also be caused by a small leak in the nozzle that pushes ORVR transactions into the Non-ORVR average.
     - Contact FFS Tech Support for further assistance
   - No: See IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202
Troubleshooting
When responding to Weekly Vapor Collection Alarms the following procedure shall be followed:

Review Maintenance Log for recent service at the affected dispenser

Visually inspect hanging hardware at the affected fueling point:
- a. Replace any damaged or worn face seals
- b. Repair or replace any misaligned face seals
- c. Replace any damaged or torn boots
- d. Tighten any loose boot clamps
- e. Replace any damaged or loose spouts

Were repairs made?
- Yes → Clear / Reset Alarm
- No → Verify nozzle tightness by VR-202 Exhibit 7 Bag Test of all nozzles at the affected dispenser

Do the nozzles pass the bag test?
- No → Replace failing nozzles and verify installation
- Yes → Verify the tightness of the affected dispenser vapor piping by performing item B-3 from the A/B Sheet of VR-202

Does the dispenser pass the test?
- No → Repair any leaks until the test passes
- Yes → Verify the operation of the VP1000 in the affected dispenser by performing items B-5 and B-6 from the A/B sheet of VR-202

Does the VP1000 pass the test?
- No → Repair the system (refer to VP1000 Retrofit Manual) and retest until the VP1000 passes the test
- Yes → Verify the vapor to liquid ratio per VR-202 Exhibit 5 on the affected fueling point

Is the V/L within the certified range?
- No → Replace nozzle and Clear / Reset Alarm* or call FFS Tech Support for further assistance
- Yes → Verify that the flowrates are between 6 – 10 GPM. Compare the Exhibit 5 V/L readings to the ISD (vapor flow meter operability +/- 0.15 per exhibit 9 or exhibit 10). Adjust the nozzle’s V/L as necessary based on the certified range of 0.95 – 1.15.

See Requirement Notes in the Introduction section of this guide for details.
Section Two: Daily Vapor Collection Alarms

Introduction to Daily Vapor Collection Alarms
This section of the guide is to inform installers, operators, and other personnel about ISD Daily Vapor Collection alarms.

A Daily Vapor Collection Alarm is an indication that based on a minimum of 15 Non-ORVR transactions the fueling point V/L average is beyond the ISD threshold on a daily basis. This is usually an indication of a large blockage or large leak in the vapor line.

A daily vapor collection alarm can also be generated if a Vapor Flow Meter (VFM) is not communicating to the console.

Warning Alarms
A Daily Vapor Collection Warning Alarm is activated and recorded when the fueling point V/L average for a minimum of 15 Non-ORVR transactions is greater than 1.90 or less than 0.33 for one day. If fewer than 15 Non-ORVR events occur in a day, the ISD system may accumulate events over an additional day or days until a minimum of 15 Non-ORVR events is reached.

Failure Alarms
When two such consecutive failed assessments occur, ISD will activate a Daily Vapor Collection Failure Alarm, record that event, and prohibit fuel dispensing from the affected fueling points.

Note: With Veeder-Root ISD, a failure alarm will shutdown the entire site. With INCON ISD, only the affected dispenser will be shutdown with a failure alarm.

BLKD Alarms
When Veeder-Root ISD reports a value of “BLKD” in the “GROSS” section, this is a statistical assessment that there are more blockages than expected from normal ORVR traffic.

Note: “BLKD” assessments do not occur when using the INCON ISD system, as only numerical assessments are made to determine blockages.
Course of Action

Print a VRM Daily Report for the last 3 days (see Figures 3 & 5 for examples)

Review daily averages from reports on fueling points with active alarms

Is the V/L averaging greater than 1.90 for one day? Yes

This would be an indicator of a large leak in the dispenser vapor piping or hanging hardware

No

Is the V/L averaging less than 0.33 for one day? Yes

This would be an indicator of a large blockage in the dispenser vapor piping or hanging hardware

No

Is a BLKD alarm indicated? Yes

Contact FFS Tech Support for further assistance

No

See IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202

This could mean that a statistical anomaly has occurred: specifically, there was an unexpected number of ORVR transactions that day (see Figure 5 in the Appendix, FP4 for an example)

Continue to troubleshooting on the following page
Troubleshooting
When responding to Daily Vapor Collection Alarms the following procedure shall be followed:

1. Review Maintenance Log for recent service at the affected dispenser

2. Verify the tightness of the affected dispenser vapor piping by performing item B-3 from the A/B Sheet of VR-202
   
   - Yes
   - No
     - Repair any leaks until the test passes

3. Does the dispenser pass the test?

4. Verify operation of the VP1000 in the affected dispenser by performing items B-5 and B-6 from the A/B sheet of VR-202

   - Yes
   - No
     - Repair the system (refer to the VP100 Retrofit Manual) and retest until VP1000 passes the test

5. Compare the daily V/L values on the Daily Report with the ISD Weekly V/L range (0.81 – 1.32)

   - Yes
   - No
     - Repair the system (refer to the VP100 Retrofit Manual) and retest until VP1000 passes the test

6. Do the values indicate that the nozzle is out of adjustment?

7. If the V/L appears to be in range, perform one fueling event into one Non-ORVR vehicle or approved container

   - Yes
   - No

8. Is the V/L recorded by ISD between 0.81 and 1.32 range?

   - Yes
   - No
     - Perform VR-202 Exhibit 5 procedure to adjust nozzle V/L within the certified 0.95 – 1.15 range. Verify that the flowrates are between 6-10 GPM. Compare the Exhibit 5 V/L readings to the ISD (vapor flow meter operability +/- 0.15 per Exhibit 9 or 10).

9. Fuel into an ORVR vehicle. Is the corresponding V/L recorded by ISD less than 0.50?

   - Yes
   - No
     - If the V/L is 0.51 or greater, replace the nozzle and note the details on the FFS Returned Goods Product Tag

10. Contact FFS Tech Support for further assistance

See Requirement Notes in the Introduction section of this guide for details.
**Introduction to ISD Ullage Pressure**

ISD collects ullage pressure measurements and evaluates these measurements in comparison to CARB specifications detailed in CP-201. In a properly maintained Healy EVR Phase II Vapor Recovery System, the ullage pressure will normally be at or below atmospheric pressure, thus limiting the occurrence of the following alarms.

If ISD ullage pressure data does not meet the appropriate specifications, ISD will produce a warning alarm and then failure alarm as specified below.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
<th>ISD Report Term</th>
</tr>
</thead>
</table>
| Monthly Ullage Pressure Alarm     | Ullage pressure is greater than +0.3" WC for 25% of time             | INCON – Monthly Ullage Pressure Warning Alarm / Failure Alarm  
VEEDER-ROOT – ISD Degrd Pressure Warning Alarm / Failure Alarm |
| Weekly Ullage Pressure Alarm      | Ullage pressure is greater than +1.3" WC for 5% of time              | INCON – Weekly Ullage Pressure Warning Alarm / Failure Alarm  
VEEDER-ROOT – ISD Gross Pressure Warning Alarm / Failure Alarm |
| Leak Test Alarm                   | Leak rate at least 2 times allowable standard from TP-201.3          | INCON – Weekly Ullage Pressure Leak Test Warning Alarm / Failure Alarm  
VEEDER-ROOT – ISD Vapor Leakage Warning Alarm / Failure Alarm |

**Figure 2: Ullage Pressure Graph**

![Ullage Pressure Graph](image)

**Table 2: ISD Ullage Pressure Terminology**
Identifying Pressure Alarms

Print ISD Monthly Report (See Figures 4 & 6 for examples) → See IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202

Review the Warning Alarm and Failure Alarm sections to determine active alarms

Is an active Monthly Ullage Pressure Alarm present? → Yes → Refer to Section Three of this guide

No

Is an active Weekly Ullage Pressure Alarm present? → Yes → Refer to Section Four of this guide

No

Is an active Ullage Pressure Leak test Alarm present? → Yes → Refer to Section Five of this guide

No

Review maintenance log to determine what actions have been taken to Clear / Reset Alarm or contact FFS Tech Support for further assistance
Section Three: Monthly Ullage Pressure Alarms

Introduction to Monthly Ullage Pressure Alarms
This section of the guide is to inform installers, operators, and other personnel about ISD Monthly Ullage Pressure warning and failure alarms. A Monthly Ullage Pressure Alarm is an indication that the ullage pressure is above the ISD threshold on a monthly basis.

Warning Alarms
A Monthly Ullage Pressure Warning Alarm is activated and recorded when the ullage pressure is greater than +0.3” WC for 25% of the time for one month.

Note: Veeder-Root ISD evaluates “DGRD” alarms on a 30 day rolling calendar. INCON ISD evaluates monthly ullage alarms in a calendar month basis.

Failure Alarms
When two such consecutive failed assessments occur, ISD will activate a Monthly Ullage Pressure Failure Alarm, record that event, and prohibit fuel dispensing for the entire site.

Note: With Veeder-Root ISD if no action is taken to correct a “DGRD” issue, the Veeder-Root ISD will post a “DGRD” warning alarm on day 30 through day 59 and then post the shutdown “DGRD” failure alarm on day 60. With INCON ISD, a warning alarm will be posted on calendar day 30 and then post the failure alarm on calendar day 60 if no action is taken to correct. The entire site will be shutdown in the event of a failure alarm with both Veeder-Root and INCON ISD.

Course of Action

Print an ISD Daily Report from the last 7 days (See Figures 3 & 5 for examples)
See IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202

Review 75th percentile values from Daily reports

Monthly Ullage Pressure Alarms indicate greater than +0.3” WC for more than 6 hours / day on average or more than 7.5 days / month on average

Continue to the troubleshooting section on the next page
Troubleshooting
When responding to Monthly Ullage Pressure Alarms the following procedure shall be followed:

1. Review Maintenance Log for recent service to ullage space components

2. Are all the ball valves for the Clean Air Separator in the correct operating positions?
   - Yes: Set ball valves per Exhibit 4 of Executive Order VR-202 to complete repairs
   - No: Clear / Reset Alarm

3. Is the ball valve near the ISD pressure sensor in the correct operating position?
   - Yes: Clear / Reset Alarm
   - No: See Exhibit 9 (Veeder Root) or Exhibit 10 (INCON) from Executive Order VR-202 to complete repairs

4. Verify nozzle tightness by VR-202 Exhibit 7 Bag Test on all fueling points
   - Does the nozzle pass the bag test?
     - Yes: Clear / Reset Alarm
     - No: Replace the nozzle and verify installation

5. Verify that the tightness of each dispenser’s vapor piping by performing item B-3 from the A/B Sheet of VR-202
   - Do the dispensers pass the test?
     - Yes: Clear / Reset Alarm
     - No: Repair any leaks until the test passes

6. Perform the ISD operability test on the vapor pressure sensor
   - Does the test pass?
     - Yes: Refer to Exhibit 9 or 10 of Executive Order VR-202 to complete repairs
     - No: Clear / Reset Alarm

7. Perform pressure and vacuum leak rate testing on all P/V vent valves
   - Does the test pass?
     - Yes: Replace the P/V vent valve and verify operation
     - No: Continue on next page

See Requirement Notes in the Introduction section of this guide for details.
Perform Clean Air Separator decay testing per VR-202 Exhibit 4

Does the test pass?

Yes

Perform 2” WC or 10” pressure decay test on entire vapor recovery system

Does the test pass?

Yes

Contact FFS Tech Support for further assistance

No

Repair any leaks until test passes

No

Fix any leaks until test passes

Yes

Clear / Reset Alarm

See Requirement Notes in the Introduction section of this guide for details.
Section Four: Weekly Ullage Pressure Alarms

Introduction to Weekly Ullage Pressure Alarms

This section of the guide is to inform installers, operators, and other personnel about ISD weekly ullage pressure alarms. A Weekly Ullage Pressure Alarm is an indication that the ullage pressure is above the ISD threshold on a weekly basis.

Warning Alarms

A Weekly Ullage Pressure Warning Alarm is activated and recorded when the ullage pressure is greater than +1.3" WC for 5% of the time for one week.

Note: Veeder Root ISD evaluates “GROSS” alarms on a 7-day rolling calendar. INCON ISD evaluates weekly ullage alarms on a calendar weekly basis.

Failure Alarms

When two such consecutive failed assessments occur, ISD will activate a Weekly Ullage Pressure Failure Alarm, record that event, and prohibit fuel dispensing for the entire site.

Note: With Veeder-Root ISD if no action is taken to correct a “GROSS” alarm issue, the Veeder-Root ISD will post a “GROSS” warning alarm on day 7 through 13 and then post the shutdown “GROSS” failure alarm on day 14. With INCON ISD, a warning alarm will be posted on calendar day 7 and then post the failure alarm on calendar day 14 if no action is taken to correct. The entire site will be shut down in the event of a failure alarm with both Veeder-Root and INCON ISD.

Course of Action

Print ISD Daily Report from the last 3 days (See Figures 3 & 5 for examples)
See IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202
Review 95th percentile values from Daily Reports
Weekly Ullage Pressure Alarms indicate greater than 1.3" WC for more than 1.2 hours / day on average, or more than 8.4 hours for 7 days on average
Continue to the troubleshooting section on the next page
Troubleshooting

When responding to Weekly Ullage Pressure Alarms the following procedure shall be followed:

Review Maintenance Log for recent service to ullage space components

Are all the ball valves for the Clean Air Separator in the correct operating positions?
- Yes
- No
  - Set ball valves per Exhibit 4 of Executive Order VR-202 to complete repairs

Is the ball valve near the ISD pressure sensor in the correct operating position?
- Yes
- No
  - See Exhibit 9 (Veeder Root) or Exhibit 10 (INCON) from Executive Order VR-202 to complete repairs

Verify that the tightness of each dispenser’s vapor piping by performing item B-3 from the A/B Sheet of VR-202

Does the dispenser pass the test?
- Yes
  - Perform the ISD operability test on the vapor pressure sensor
- No
  - Repair any leaks until the test passes

Does the test pass?
- Yes
  - Refer to Exhibit 9 or Exhibit 10 of Executive Order VR-202 to complete repairs
- No
  - Replace the P/V vent valve and verify operation

Perform pressure and vacuum leak rate testing on all P/V vent valves

Does the test pass?
- Yes
  - Continue on next page
- No
  - Clear / Reset Alarm

See Requirement Notes in the Introduction section of this guide for details.
Perform Clean Air Separator decay testing per VR-202 Exhibit 4

Does the test pass?

No → Repair any leaks until test passes

Yes → Perform 2” WC pressure decay test on entire vapor recovery system per TP201.3

Does the test pass?

No → Repair any leaks until test passes

Yes → Contact FFS Tech Support for further assistance

Clear / Reset Alarm

See Requirement Notes in the Introduction section of this guide for details.
Section Five: Ullage Pressure Leak Test Alarms

Introduction to Ullage Pressure Leak Test Alarms
This section of the guide is to inform installers, operators, and other personnel about ISD ullage pressure leak test alarms. An Ullage Pressure Leak Test Alarm is an indication that a leak in the Phase I and/or Phase II vapor recovery system is in excess of the CP-201 standard on a weekly basis.

Warning Alarms
An Ullage Pressure Leak Test Warning Alarm is activated and recorded when the leak rate of the vapor recovery system is two times the allowable rate as stated in TP-201.3 for one week.

Failure Alarms
When two such consecutive failed assessments occur, ISD will activate an Ullage Pressure Leak Test Failure Alarm, record that event, and prohibit fuel dispensing for the entire site.

Course of Action

Print an ISD Daily Report for the last 3 days (See Figures 3 & 5 for examples)

See IOM 19 (Veeder Root) or IOM 22 (INCON) from Executive Order VR-202

Ullage Pressure Leak Test Alarms indicate an ullage space leak. For a typical 12-hose site, this means it exceed 8.5 CFH (limit ranges over 8-10 CFH for less than 6 hoses to greater than 24 hoses).

Continue to the troubleshooting section on the next page
Troubleshooting
When responding to Ullage Pressure Leak Test Alarms the following procedure shall be followed:

1. Review Maintenance Log for Recent service to ullage space components
2. Verify nozzle tightness by VR-202
3. Exhibit 7 Bag Test on all fueling points
4. Does the nozzle pass the bag test?
   - Yes: Proceed to next step
   - No: Replace the nozzle and verify installation
5. Verify that the tightness of each dispenser’s vapor piping by performing item B-3 from the A/B Sheet of VR-202
6. Does the dispenser pass the test?
   - Yes: Proceed to next step
   - No: Repair any leaks until the test passes
7. Perform the ISD operability test on the vapor pressure sensor
8. Does the test pass?
   - Yes: Proceed to next step
   - No: Refer to Exhibit 9 (Veeder Root) or Exhibit 10 (INCON) of Executive Order VR-202 to complete repairs
9. Perform pressure and vacuum leak rate testing on all P/V vent valves
10. Does the test pass?
    - Yes: Proceed to next step
    - No: Replace the P/V vent valve and verify operation
11. See Requirement Notes in the Introduction section of this guide for details.
Perform Clean Air Separator decay testing per VR-202 Exhibit 4

Does the test pass?

Yes → Perform 2” WC or 10” WC pressure decay test on entire vapor recovery system

No → Repair any leaks until test passes

Yes

Contact FFS Tech Support for further assistance

No → Repair any leaks until test passes

See Requirement Notes in the Introduction section of this guide for details.
**Figure 3: INCON ISD Daily Report (Printout)**

**Note:** For this example on 2/24/2009, fueling points 1 and 4 are below the daily transaction threshold, resulting in no assessment for that day.

**Note:** For this example on 2/26/2009, fueling points 3 and 4 are below the daily vapor collection threshold, indicating a potential blockage for that day.

**Note:** On the daily report, pressure 75th and 95th percentile are for the given day and are for reference only.
Figure 4: INCON ISD Monthly Report (Printout)

Note: The FP3 weekly vapor collection failure alarm on the report does not meet the monitoring requirements specified by CP-201.

Note: On the monthly report refer to the values listed under monitoring requirements. These are the values that cannot be exceeded for the monitoring period. Under the warning alarm and failure alarm sections, notice the weekly ullage pressure warning alarm and then failure alarm.
Figure 5: Veeer-Root ISD Daily Report (Printout)

**Note:** The values on the left side of the report show the most recent daily (GROSS) V/L average for non-ORVR transactions. The values on the right side of the report show the most recent weekly (DGRD) V/L average for non-ORVR transactions.
**Report Type**

**Last 10 Warning Alarms**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Device</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-27</td>
<td>23:59 FF06</td>
<td>BLEND</td>
<td>DERG COLLECT WARN 0.00</td>
<td></td>
</tr>
<tr>
<td>2-27</td>
<td>23:59 FF05</td>
<td>BLEND</td>
<td>DERG COLLECT WARN 0.00</td>
<td></td>
</tr>
<tr>
<td>2-26</td>
<td>23:59 FF05</td>
<td>BLEND</td>
<td>DERG COLLECT WARN 0.00</td>
<td></td>
</tr>
<tr>
<td>2-25</td>
<td>23:59 FF06</td>
<td>BLEND</td>
<td>GROSS COLLECT WARN BLRD</td>
<td></td>
</tr>
<tr>
<td>2-25</td>
<td>23:59 FF05</td>
<td>BLEND</td>
<td>GROSS COLLECT WARN BLRD</td>
<td></td>
</tr>
</tbody>
</table>

**Last 10 Failure Alarms**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Device</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-27</td>
<td>23:59 FF06</td>
<td>BLEND</td>
<td>GROSS COLLECT FAIL BLRD</td>
<td></td>
</tr>
<tr>
<td>2-27</td>
<td>23:59 FF05</td>
<td>BLEND</td>
<td>GROSS COLLECT FAIL BLRD</td>
<td></td>
</tr>
<tr>
<td>2-26</td>
<td>23:59 FF06</td>
<td>BLEND</td>
<td>GROSS COLLECT FAIL BLRD</td>
<td></td>
</tr>
<tr>
<td>2-26</td>
<td>23:59 FF05</td>
<td>BLEND</td>
<td>GROSS COLLECT FAIL BLRD</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 6: Veeder-Root ISD Monthly Report Printout*
Returned Goods Product Tag

Returned Goods Authorization # ____________________________________________

Product Return Date _______________ Contact FFS Tech Support for RGA#

Product Install Date __________________________ FFS Part Number ____________________

Distributor Name & Location ___________________________________________________

Distributor Contact name

Distributor Contact Phone / E-mail

Distributor Notes: ___________________________________________________________

If product is returned within warranty period and FFS determines product to have a manufacturing defect, a replacement product will be shipped.

If product returned is beyond the applicable warranty period or FFS determines product to have no defect, I would like (check one):

☐ Core Credit to account ☐ Return Product as is

☐ Return Product after Rebuild (charge to PO# _______________________)

Site Name & Location _________________________________________________________

Service Date ____________________ Date Code / Serial # ___________________________

Service Company name / Location

Service Tech Name __________________ Healy Tech. Cert. #_________________________

Service Notes (Detailed description of symptom, including any active ISD alarms and service performed)

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

NOTE: For Vapor Collection Alarms, you MUST staple the last 3 days of ISD Daily Reports to this tag and provide the following details. Refer to Healy EVR Troubleshooting Guide 405274001 for details.

• Affected fueling point __________________________ Service Tech ISD Cert# ______________

• Vapor-to-Liquid Ratio per Exhibit 5 (V/L 0.95-1.15):  #1 ______ #2 _____ #3 ______

• ISD Vapor-to-Liquid Readings (vs Exhibit 5 V/L +/- 0.15):  #1 ______ #2 _____ #3 ______

• ORVR Vehicle Fueling reading from ISD (V/L less than 0.50):  #1 ______ #2 _____ #3 ______

Figure 7: Example of Return Tag (FFS-0093)