



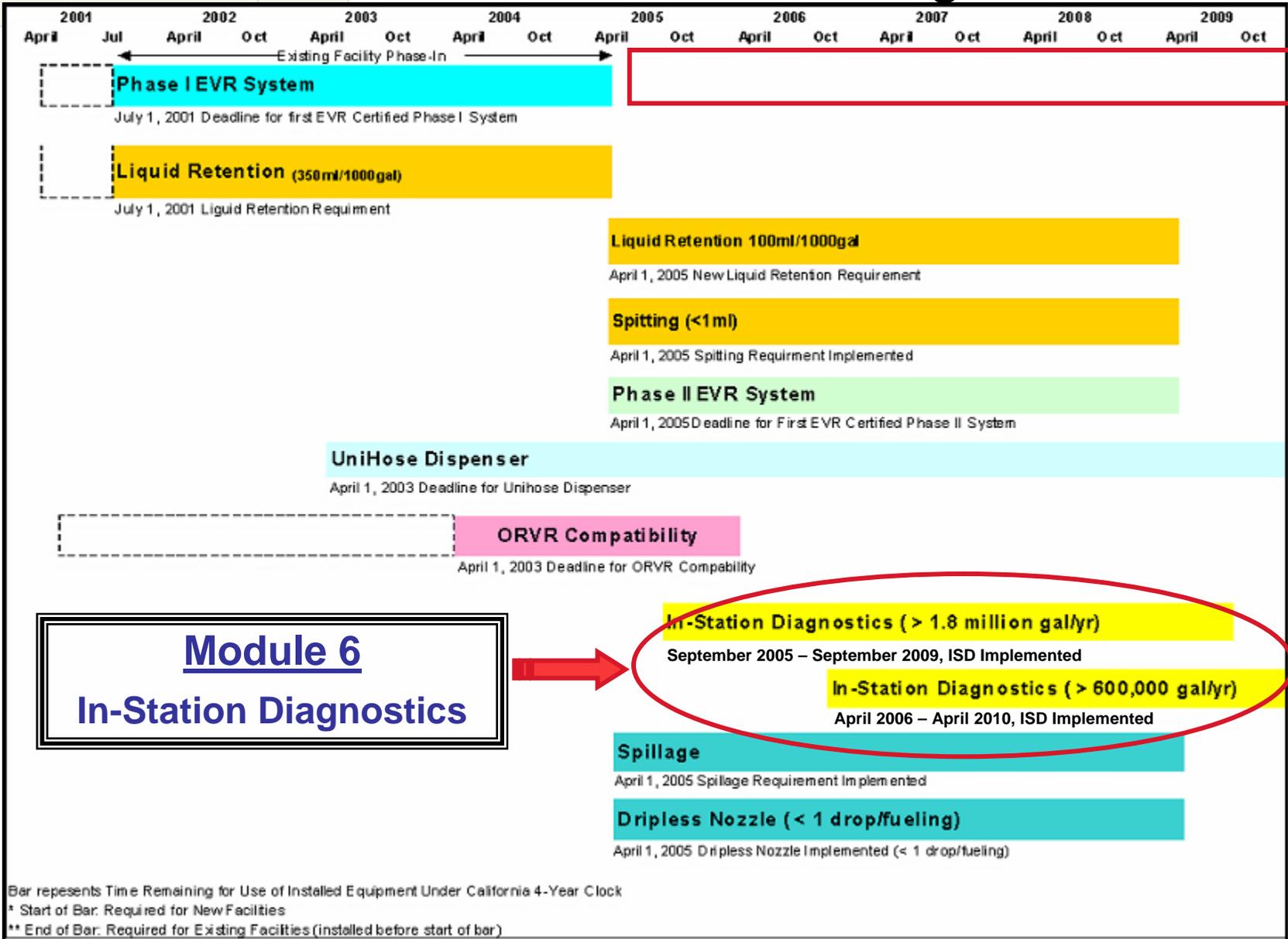
Veeder-Root ISD System Overview

CARB ISD Workshop

November 2006



Module 6: In-Station Diagnostics



In-Station Diagnostics

Vapor Collection Monitoring



- A/L & Flow Performance Collection Tests

Stage II

Stage I

Vapor Containment Monitoring



- Over Pressure & Tests
- Vapor Leakage Detection

Self-Test Monitoring



- Setup Testing
- Sensor Out Testing

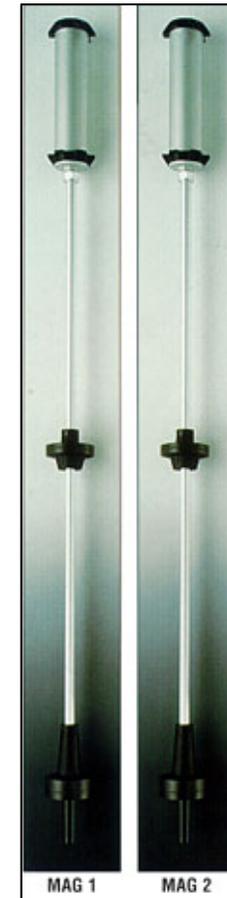
Required Equipment



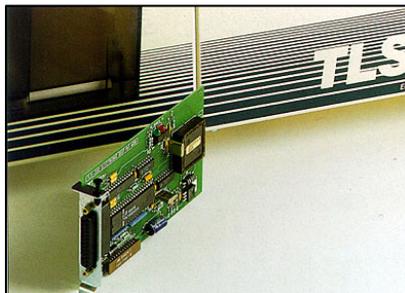
TLS-350 Console
(70,000 installed)



Vapor Flow Meter
(new – 1 per dispenser)



Inventory Probe

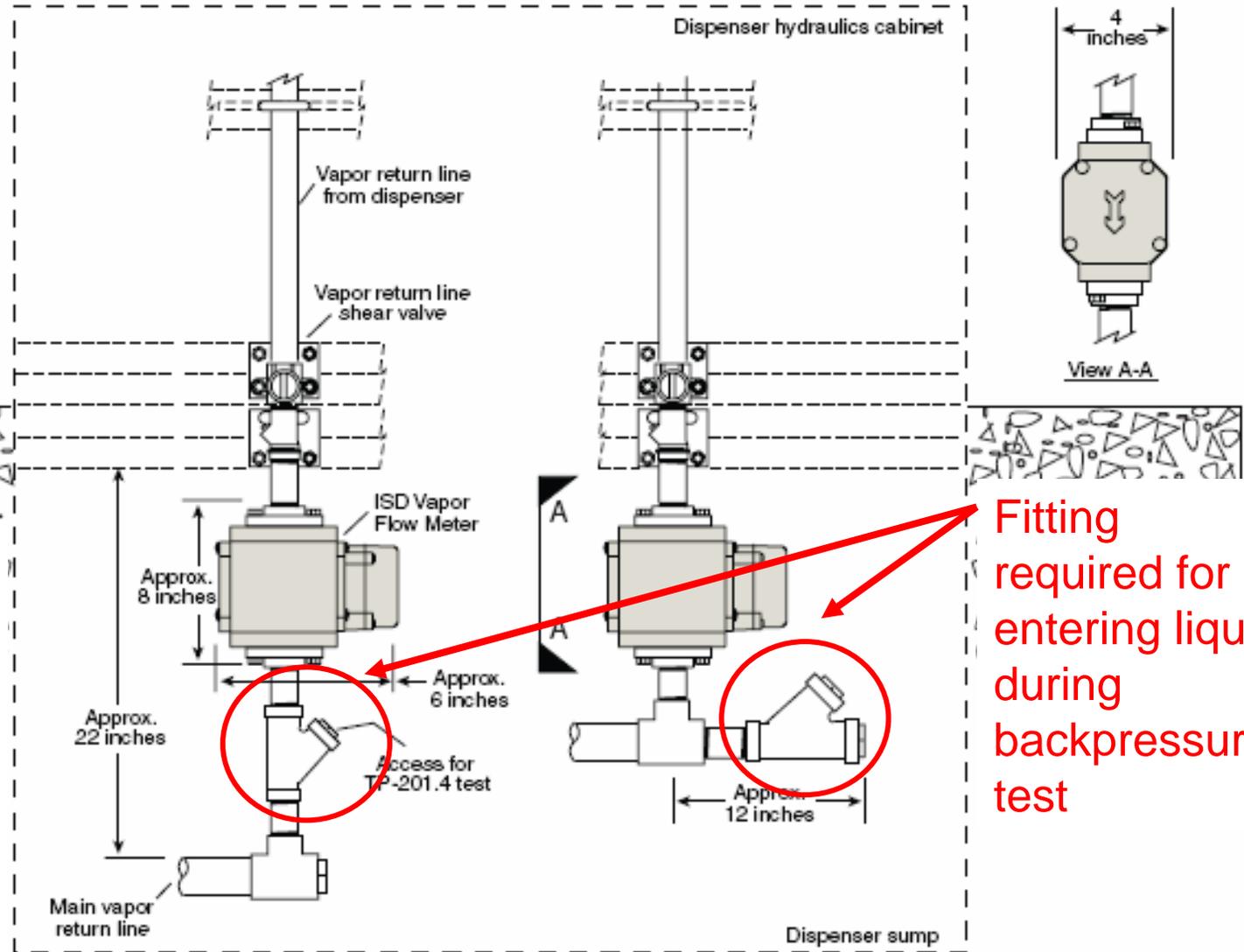


Dispenser Interface Module



Pressure Sensor
(new – 1 per site)

Vapor Flow Meter: Below Shear Valve



Fitting required for entering liquid during backpressure test

- Intrinsically safe sensor
- Can share a conduit with another VR IS sensor
- Connects to a smart sensor module in the TLS 350

VERTICAL ACCESS FITTING INSTALL

HORIZONTAL ACCESS FITTING INSTALL

vrmp1umb.eps

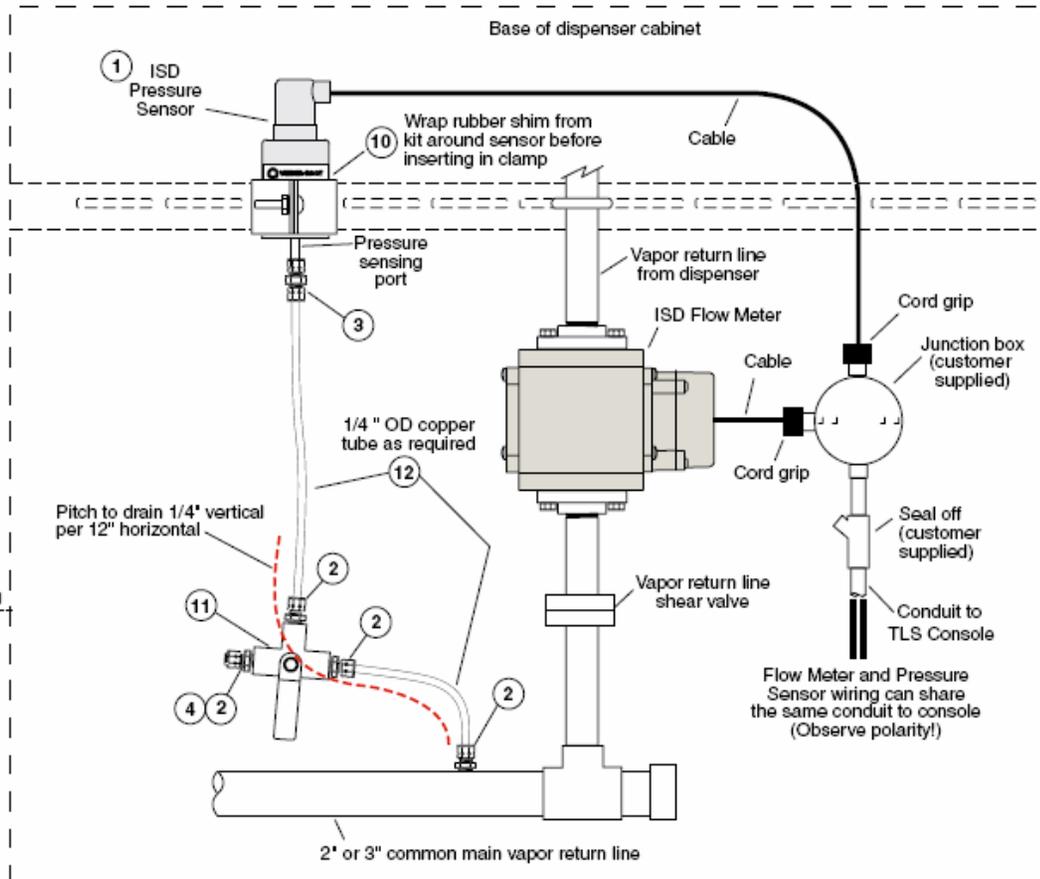


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Vapor Pressure Sensor - Installation



- Taps into the vapor return line at a dispenser (below flowmeter & vacuum pump)
- Intrinsically safe sensor
- Can share a conduit with another VR IS sensor
- Connects to a smart sensor module in the TLS 350



(X) Numbers in circle refer to item numbers (kit components) in Table 1

isd-ext/term©r.apx

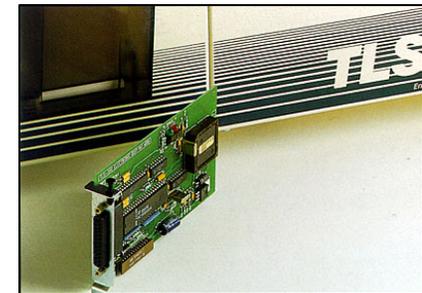
Vapor Collection (A/L Ratio) Monitoring



- Assist: Degradation A/L – 7 Days Warning Before Alarm (Healthy Threshold: $A/L \leq 0.81$ or ≥ 1.32)
- Assist: Gross A/L – 1 Day Warning Before Alarm (Healthy Threshold: $A/L \leq 0.33$ or ≥ 1.90)



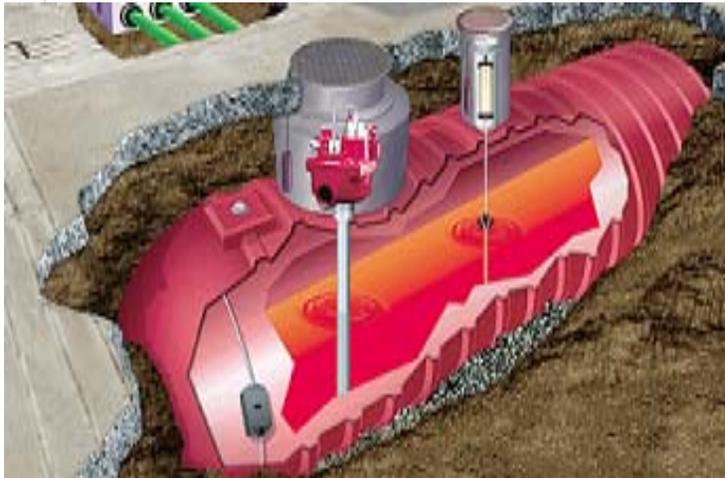
Vapor Flow Meter
(1 per dispenser)



Dispenser Interface
Module
(1 per station)

- Collection monitoring is performed on Stage II vapor recovery systems

Vapor Containment Monitoring



- Gross Over Pressure – 7 Days Warning Before Alarm (Threshold: +1.3 IWC > 5% of the time over 7 days)
- Degradation Over Pressure – 30 Days Warning Before Alarm (Threshold: + 0.5 IWC > 25% of the time over 30 days)
- Containment Leakage – 7 Days Warning Before Alarm (Threshold: > 8 – 14 CFH leak at 2IWC over 7 days)

- Containment monitoring is performed on Stage I and Stage II vapor recovery systems



Pressure Sensor
(1 per station)

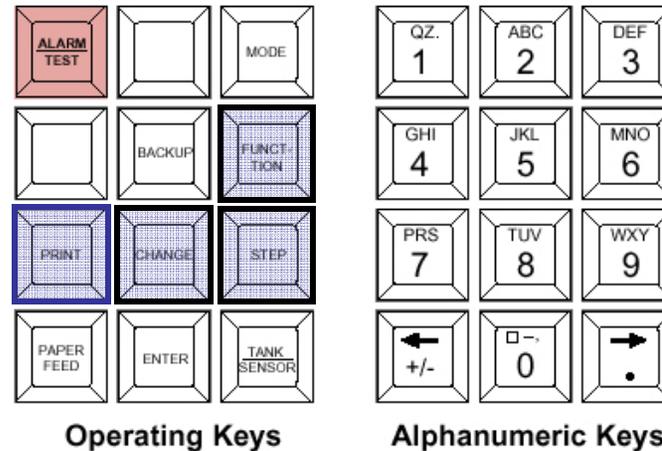


Inventory Probe
(1 per tank)

Front Panel Display - All Functions Normal

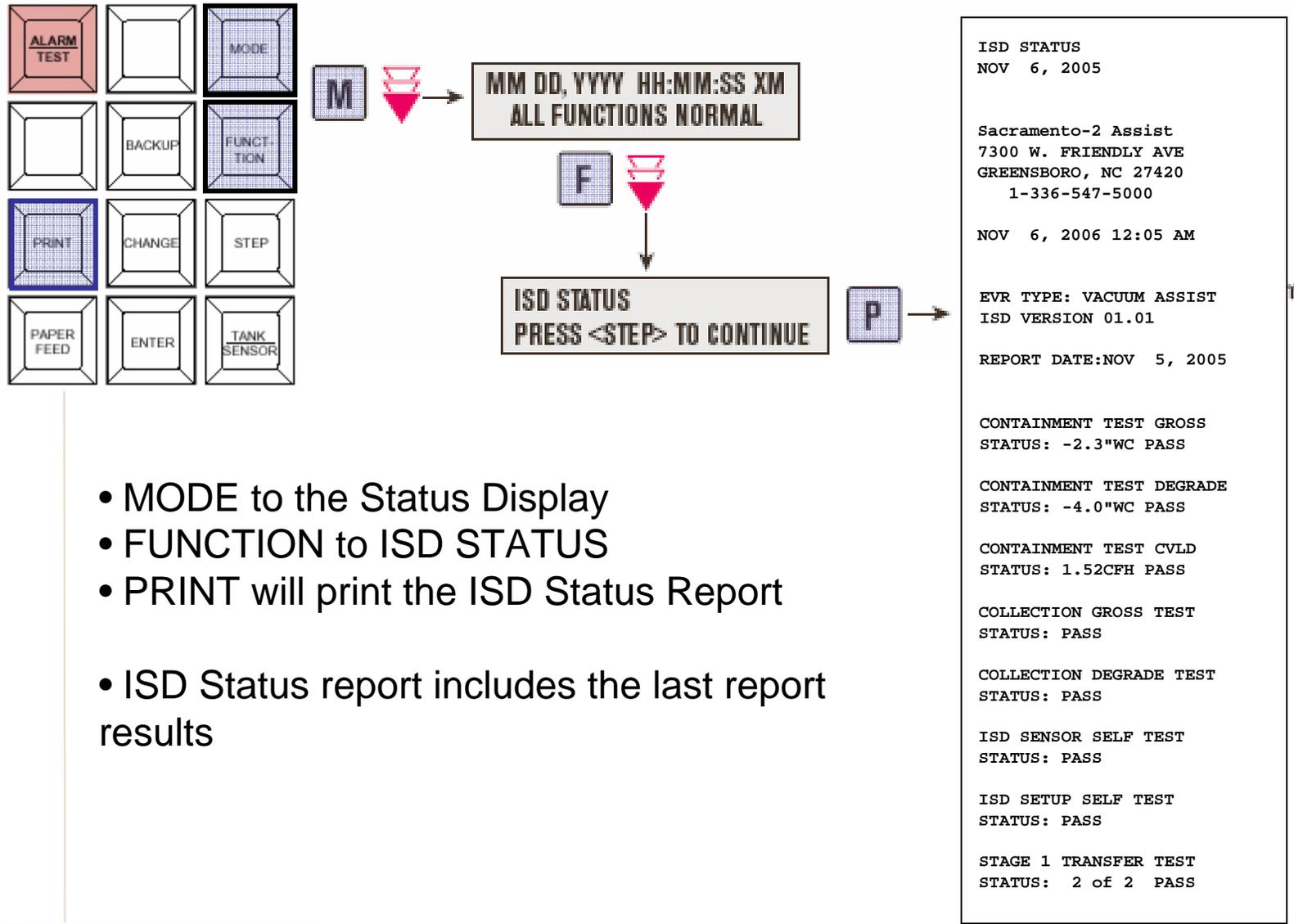
MMM DD, YYYY HH:MM XM
ALL FUNCTIONS NORMAL

All the printouts can be accessed from the main menu using the front panel keys.



- During normal operation when the *TLS Console* and monitored *EVR/ISD System* is functioning properly and no alarm conditions exist, the "ALL FUNCTIONS NORMAL" message will appear in the system status (bottom) line of the console display.

ISD Status - Printout



- MODE to the Status Display
- FUNCTION to ISD STATUS
- PRINT will print the ISD Status Report

- ISD Status report includes the last report results

ISD Status - Printout

```
ISD STATUS
NOV 6, 2005

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

NOV 6, 2006 12:05 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.01

REPORT DATE:NOV 6, 2005

CONTAINMENT TEST GROSS
STATUS: -2.3"WC PASS

CONTAINMENT TEST DEGRADE
STATUS: -4.0"WC PASS

CONTAINMENT TEST CVLD
STATUS: 1.52CFH PASS

COLLECTION GROSS TEST
STATUS: PASS

COLLECTION DEGRADE TEST
STATUS: PASS

ISD SENSOR SELF TEST
STATUS: PASS

ISD SETUP SELF TEST
STATUS: PASS

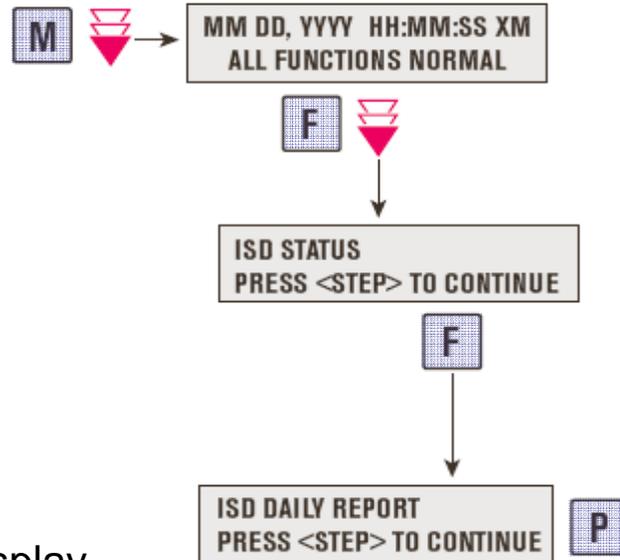
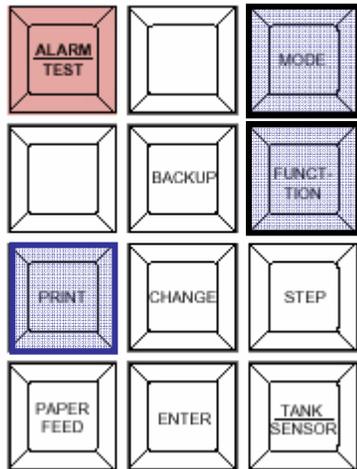
STAGE 1 TRANSFER TEST
STATUS: 2 of 2 PASS
```

- Date report is printed
- Version of ISD that posted results
- Date of ISD results
- Containment Results
- Collection Results
- Self Test Results
- Stage 1 Transfer Test can be ignored



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ISD Daily Report - Printout



```

ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

NOV 6, 2006 12:30 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.01

REPORT DATE: NOV 5
ISD VERSION 01.01

OVERALL STATUS PASS
EVR CONTAINMENT PASS
EVR COLLECTION PASS
STAGE1 3 of 3 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%
-----
CONTAINMENT TESTS

GROSS 95% -2.3 "WC
DGRD 75% -4.0 "WC
VAPOR LEAK 2 CFH
MAX 0.8 "WC
MIN -5.0 "WC
-----
COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND4
1.07( 39) 1.21(218)
FP 2: BLEND4
1.10( 56) 1.08(258)
-----
SELF TEST

SETUP TEST PASS
SENSOR OUT TEST PASS
    
```

- MODE to the Status Display
- FUNCTION to ISD DAILY REPORT
- PRINT will print the ISD Daily Report
- ISD Daily Report includes:
 - ✓ Overall status
 - ✓ Containment results
 - ✓ Individual hose results
 - ✓ Self Test Results

ISD Daily Report - Printout

Date report is printed
Version of ISD that printed report
Date of ISD results
Version of ISD that posted results

Overall status
Stage 1 Transfer Test can be ignored
Containment Results

Collection Results
Individual hose results

Self Test Results

```
ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

NOV 6, 2006 12:30 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.01

REPORT DATE: NOV 5
ISD VERSION 01.01

OVERALL STATUS PASS
EVR CONTAINMENT PASS
EVR COLLECTION PASS
STAGE1 3 of 3 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%
-----
CONTAINMENT TESTS

GROSS 95% -2.3 "WC
DGRD 75% -4.0 "WC
VAPOR LEAK 2 CFH
MAX 0.8 "WC
MIN -5.0 "WC
-----
COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

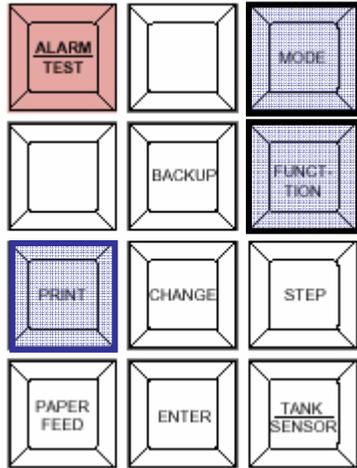
FP 1: BLEND4
1.07( 39) 1.21(218)
FP 2: BLEND4
1.10( 56) 1.08(258)
-----
SELF TEST

SETUP TEST PASS
SENSOR OUT TEST PASS
```

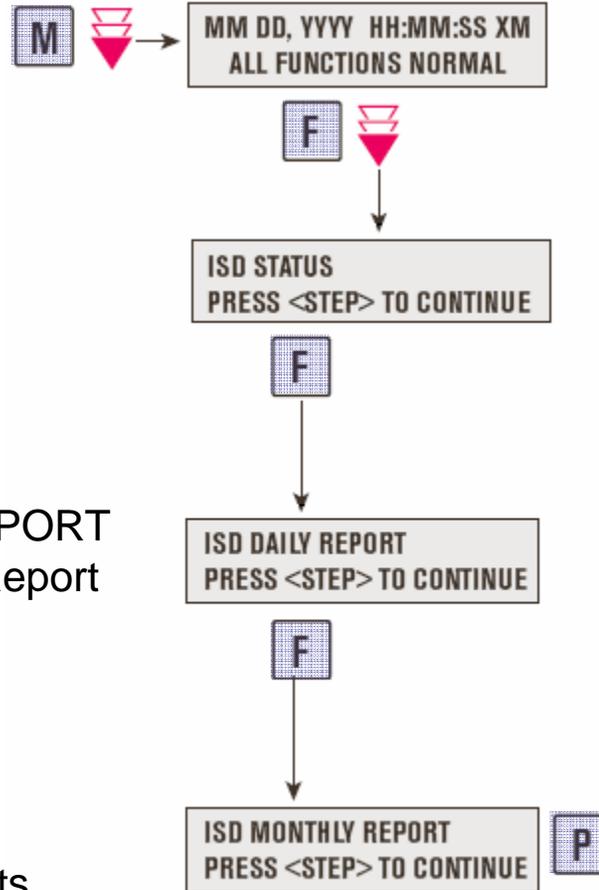


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ISD Monthly Report - Printout



- MODE to the Status Display
- FUNCTION to ISD MONTHLY REPORT
- PRINT will print the ISD Monthly Report
- ISD Monthly report includes
 - ✓ Overall status
 - ✓ Last 10 Warnings
 - ✓ Last 10 Failures
 - ✓ Last 10 Miscellaneous Events



```

ISD MONTHLY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

FEB 27, 2004 12:05 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.01

REPORT DATE: FEB 2004

OVERALL STATUS   FAIL
EVR CONTAINMENT  PASS
EVR COLLECTION   FAIL
STAGE1 60 of 60 NOTEST
SELF TEST       PASS
ISD MONITOR UP-TIME:100%
EVR/ISD PASS TIME: 89%

-----
DATE TIME DEVICE HOSE
DESCRIPTION VALUE
-----
LAST 10 WARNINGS

  2-25 23:59 FP06 BLEND4
GROSS COLLECT WARN BLKD
-----
LAST 10 FAILURES

  2-26 23:59 FP06 BLEND4
GROSS COLLECT FAIL BLKD
-----
LAST 10 MISC EVENTS

  2-26-04 11:59PM
DISABLED FP06 BLEND4
A/L RATIO GROSS BLOCKAGE
    
```

ISD Monthly Report - Printout

Date report is printed
Version of ISD that printed report
Month of ISD report
Overall status
Ignore Stage 1 Transfer Test

```
ISD MONTHLY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

FEB 27, 2004 12:05 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.01

REPORT DATE: FEB 2004

OVERALL STATUS  FAIL
EVR CONTAINMENT PASS
EVR COLLECTION  FAIL
STAGE1 60 of 60 NOTEST
SELF TEST      PASS
ISD MONITOR UP-TIME:100%
EVR/ISD PASS TIME: 89%

-----
DATE TIME DEVICE HOSE
DESCRIPTION      VALUE
-----
LAST 10 WARNINGS

  2-25 23:59 FP06 BLEND4
GROSS COLLECT WARN BLKD
-----
LAST 10 FAILURES

  2-26 23:59 FP06 BLEND4
GROSS COLLECT FAIL BLKD
-----
LAST 10 MISC EVENTS

  2-26-04 11:59PM
DISABLED FP06 BLEND4
A/L RATIO GROSS BLOCKAGE
```

Warnings & Failures

Miscellaneous Events

ISD Manuals & Training

- **ISD Manuals (CARB Controlled)**
 - ISD Install, Setup & Operation Manual
 - ISD Flowmeter Installation Guide
 - ISD Pressure Sensor Installation Guide
- **Additional Manuals / Support Options**
 - ISD Quick Reference Guide
 - ISD Troubleshooting Guide
 - Fuel Management Service (FMS) For ISD
- **ISD Training Program**
 - ISD course requires up-to-date L2/L3 or L4 Veeder-Root certification
 - ISD course required to startup / troubleshoot an ISD system
- **A L1 certification is required to install TLS sensors including ISD**

ISD Quick Reference Guide (Front)

Warnings

WARNINGS indicate when attention is required. When a WARNING is posted a warning alarm event is logged in the ISD reports, posted on the front panel display and printed to the printer. If the condition persists, a WARNING will remain active for a 1, 7 or 30 day warning period depending on the test type (see Alarm Table on reverse side).

Failures

If a WARNING condition persists, a FAILURE alarm will be posted after the warning period and THE SITE DISPENSING EQUIPMENT IS SHUTDOWN (see RESTARTING STATION AFTER ISD SHUTDOWN for instructions on restarting dispensing).

RESTARTING STATION AFTER ISD SHUTDOWN

Consult state and local regulations prior to restarting equipment.

ISD Quick Reference Guide

ALARM MESSAGES

ISD monitoring tests operate once each day. Warning and failure conditions are posted at the designated posting time after the tests are complete.

Warnings

WARNINGS indicate when attention is required. When a WARNING is posted a warning alarm event is logged in the ISD reports, posted on the front panel display and printed to the printer. If the condition persists, a WARNING will remain active for a 1, 7 or 30 day warning period depending on the test type (see Alarm Table on reverse side).

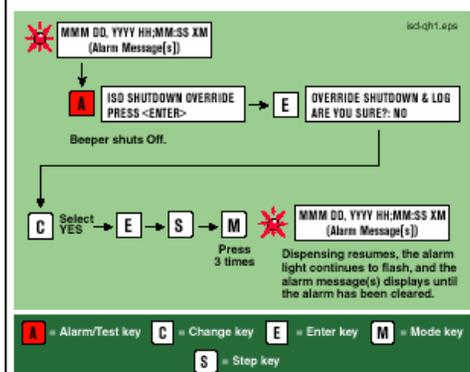
Failures

If a WARNING condition persists, a FAILURE alarm will be posted after the warning period and THE SITE DISPENSING EQUIPMENT IS SHUTDOWN (see RESTARTING STATION AFTER ISD SHUTDOWN for instructions on restarting dispensing).

When a FAILURE is posted a failure alarm event is logged in the ISD reports, posted on the front panel display and printed to the printer.

RESTARTING STATION AFTER ISD SHUTDOWN

Consult state and local regulations prior to restarting equipment.



REFERENCE MANUALS

- ISD Setup & Operation - P/N 577013-800
- ISD Troubleshooting - P/N 577013-819

ISD Quick Reference Guide (Back)

DISABLING GAS HOSES

You can disable the fueling from an effected hose to avoid consecutive FAILURE alarm for the following alarms:

- DEGRD COLLECT FAIL
- GROSS COLLECT FAIL
- FLOW COLLECT FAIL

ALARM TABLE

Warning Alarm	Days to Failure	Shutdown Required

ISD Quick Reference Guide

DISABLING GAS HOSES

You can disable the fueling from an effected hose to avoid consecutive FAILURE alarm for the following alarms:

- DEGRD COLLECT FAIL
- GROSS COLLECT FAIL
- FLOW COLLECT FAIL

An alarm printout will have the fueling position (FP) number and hose label (e.g., regular) associated with the alarm (bold type in example below):

```

---- ISD HOSE ALARM ----
h 3:FP3: REGULAR
FLOW COLLECT FAIL
JUL 11, 2004 11:59 PM
    
```

If the alarm printout is not available, press the [Function] key on the TLS until the ISD Monthly Report displays. Press [Print] or [Step] to view the recent active alarms in the Last 10 Failure list and identify the fueling position number and hose label.

ALARM TABLE

Warning Alarm	Days to Failure	Shutdown Required
ISD DEGRD PRESSURE	99	Yes
ISD GROSS PRESSURE	7	Yes
ISD VAPOR LEAKAGE	7	Yes
ISD SENSOR OUT	7	Optional ¹
ISD SETUP	7	Optional ¹
Hnn: DEGRD COLLECT	7	Yes
Hnn: GROSS COLLECT	1	Yes
Hnn: FLOW COLLECT	1	Yes
ISD VP STATUS	1	Yes
ISD VP PRESSURE	1	Yes

Assist EVR Systems Only

Balance EVR Systems Only

Vapor Processor Required

¹Shutdown is optional for these alarm conditions and it is recommended that they be enabled.

REPAIR

Contact your local ASC at the phone number below:

Alarm Simulation Scenario

- Typical Station Configuration
- Alarm Response Scenario
 - (Day 1) Passing hose tests
 - (Day 2) Hose blockage warning
 - (Day 3) Hose blockage alarm
 - (Day 4) Hose removed from service by bagging
 - (Day 5) Hose repaired
- TLS Historical Reports

TLS Back Room Installation



ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 22, 2004 12:00 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.00

REPORT DATE: MAY 22
ISD VERSION 01.00

OVERALL STATUS PASS
EVR CONTAINMENT PASS
EVR COLLECTION PASS
STAGE1 1 of 1 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%

CONTAINMENT TESTS

GROSS 95% 0.2N "WC
DGRD 75% 0.0N "WC
VAPOR LEAK 0 CFH
MAX 1.3 "WC
MIN -2.5 "WC

COLLECTION TESTS

GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND
1.22(44) 1.23(285)
FP 2: BLEND
1.20(42) 1.16(240)
FP 3: BLEND
1.29(42) 1.23(200)
FP 4: BLEND
1.26(57) 1.23(304)
FP 5: BLEND
1.30(45) 1.25(236)
FP 6: BLEND
1.22(48) 1.24(372)
FP 7: BLEND
1.14(39) 1.16(249)
FP 8: BLEND
1.28(67) 1.21(427)
FP 9: BLEND
1.31(44) 1.27(244)
FP10: BLEND
1.31(54) 1.29(382)
FP11: BLEND
1.34(42) 1.31(230)
FP12: BLEND
1.28(81) 1.28(468)

SELF TEST

SETUP TEST PASS
SENSOR OUT TEST PASS

(Day 1) Passing hose tests

May 22nd 2004

Daily Report Printout - Collection PASS

OVERALL STATUS PASS
EVR CONTAINMENT PASS
EVR COLLECTION PASS
STAGE1 1 of 1 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%

COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND
1.22(44) 1.23(285)
FP 2: BLEND
1.20(42) 1.16(240)
FP 3: BLEND
1.29(42) 1.23(200)



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ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 23, 2004 12:21 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.00

REPORT DATE: MAY 23
ISD VERSION 01.00

OVERALL STATUS WARN
EVR CONTAINMENT PASS
EVR COLLECTION WARN
STAGE1 1 of 1 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%

CONTAINMENT TESTS

GROSS 95% 0.2 "WC
DGRD 75% 0.1N "WC
VAPOR LEAK 0 CFH
MAX 0.2 "WC
MIN -5.0 "WC

COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND
BLKD(50)W 1.23(335)
FP 2: BLEND
1.13(43) 1.15(283)
FP 3: BLEND
1.23(31) 1.23(231)
FP 4: BLEND
1.28(47) 1.24(351)
FP 5: BLEND
1.18(41) 1.24(277)
FP 6: BLEND
1.21(50) 1.24(422)
FP 7: BLEND
1.28(31) 1.17(238)
FP 8: BLEND
1.24(64) 1.21(417)
FP 9: BLEND
1.26(47) 1.27(291)
FP10: BLEND
1.24(55) 1.28(437)
FP11: BLEND
1.25(37) 1.29(227)
FP12: BLEND
1.26(92) 1.28(477)

SELF TEST

SETUP TEST PASS
SENSOR OUT TEST PASS

(Day 2) Hose blockage warning

May 23nd 2004

FP 1 Warning Displayed:

MAY 23, 2004 11:59:37 PM
h 1:GROSS COLLECT WARN

FP 1 Warning Printed:

---- ISD HOSE ALARM ----
h 1:FP1: BLEND
GROSS COLLECT WARN
MAY 23, 2004 11:59 PM

COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND
BLKD(50)W 1.23(335)
FP 2: BLEND
1.13(43) 1.15(283)
FP 3: BLEND
1.23(31) 1.23(231)



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(Day 3) Hose blockage alarm

May 24nd 2004

FP 1 Alarm Displayed:

```
MAY 24, 2004 11:59:22 PM  
h 1:GROSS COLLECT FAIL
```

FP 1 Alarm Printed:

```
---- ISD HOSE ALARM ----  
h 1:FP1: BLEND  
GROSS COLLECT FAIL  
MAY 24, 2004 11:59 PM
```

(Day 3) Hose blockage alarm

The screenshot shows the TLS-350 SIMULATOR V1.30 interface. The top status bar displays the date and time: MAY 24, 2004 11:59:17 PM. Below this, the text 'h 1:GROSS COLLECT FAIL' is shown. The main display area is divided into two sections. The top section shows a 'SYSTEM STATUS REPORT' with the message 'ALL FUNCTIONS NORMAL'. The bottom section shows an 'ISD HOSE ALARM' report with the following details: 'h 1:FP1: BLEND', 'GROSS COLLECT WARN', and 'MAY 23, 2004 11:59 PM'. A hand is pointing to the 'ALARM TEST' button on the control panel. The control panel includes a red 'ALARM' indicator light, a 'POWER' indicator light, and a keypad with buttons for 'MODE', 'BACK UP', 'FUNCTION', 'PRINT', 'CHNG', 'STEP', 'PAPER FEED', 'ENTER', and 'TANK SENSR'. The keypad also features a numeric keypad (1-9, 0) and function keys like 'Q Z ABC DEF', 'GHI JKL MNO', 'PRS TUUV WXY', and '+/-', '0', and a decimal point. At the bottom of the interface, there are buttons for 'New Paper', 'RUN', and a dropdown menu set to 'NONE', along with 'RS232' and a checked 'Daily Pause' option.

4th 2004

(Day 3) Hose blockage alarm

4th 2004

TLS-350 SIMULATOR V1.30

SYSTEM STATUS REPORT

ALL FUNCTIONS NORMAL

----- ISD HOSE ALARM -----
h 1:FP1: BLEND
GROSS COLLECT WARN
MAY 23, 2004 11:59 PM

----- ISD HOSE ALARM -----
h 1:FP1: BLEND
GROSS COLLECT FAIL
MAY 24, 2004 11:59 PM

ISD SHUTDOWN OVERRIDE
PRESS <ENTER>

ALARM <input type="radio"/>	ALARM TEST	MODE	Q Z ABC DEF 1 2 3
WARNING <input type="radio"/>	BACK UP	FUNCTION	GHI JKL MNO 4 5 6
POWER <input checked="" type="radio"/>	PRINT CHNG	STEP	PRS TUU WXY 7 8 9
	PAPER FEED ENTER	TANK SENSUR	← - ' → +/- 0 .

RS232
 Daily Pause

(Day 3) Hose blockage alarm

TLS-350 SIMULATOR V1.30

SYSTEM STATUS REPORT

ALL FUNCTIONS NORMAL

----- ISD HOSE ALARM -----
h 1:FP1: BLEND
GROSS COLLECT WARN
MAY 23, 2004 11:59 PM

----- ISD HOSE ALARM -----
h 1:FP1: BLEND
GROSS COLLECT FAIL
MAY 24, 2004 11:59 PM

OVERVERRIDE ISD SHUTDOWN?
ARE YOU SURE? : NO

ALARM **ALARM TEST**

WARNING

POWER

MODE	Q Z	ABC	DEF
	1	2	3
BACK UP	FUNC-TION	GHI	JKL
		4	5
PRINT CHNG	STEP	PRS	TUU
		7	8
ENTER	TANK SENS	←	→
		+/-	0

New Paper RUN NONE RS232 Daily Pause

4nd 2004

(Day 3) Hose blockage alarm

TLS-350 SIMULATOR V1.30

----- SYSTEM ALARM -----
BATTERY IS OFF
MAY 17, 2004 12:00 AM

*** SYSTEM RESET ***
MAY 17, 2004 12:00 AM

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 17, 2004 12:00 AM

SYSTEM STATUS REPORT

ALL FUNCTIONS NORMAL

ALARM **ALARM TEST**

WARNING

POWER

MODE	Q Z ABC DEF		
	1 2 3		
BACK UP	FUNCTION	GHI JKL MNO	
		4 5 6	
PRINT	CHNG	STEP	PRS TUU WXY
			7 8 9
PAPER FEED	ENTER	TANK SENSR	← - ' →
			+/- 0 .

New Paper RUN NONE RS232 Daily Pause



4th 2004

(Day 3) Hose blockage alarm

TLS-350 SIMULATOR V1.30

----- SYSTEM ALARM -----
BATTERY IS OFF
MAY 17, 2004 12:00 AM

* * * SYSTEM RESET * * *
MAY 17, 2004 12:00 AM

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 17, 2004 12:00 AM

SYSTEM STATUS REPORT

ALL FUNCTIONS NORMAL

ARE YOU SURE? : YES
PRESS <STEP> TO CONTINUE

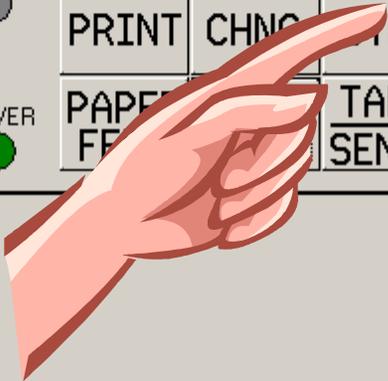
ALARM  **ALARM TEST** MODE Q Z ABC DEF
1 2 3

WARNING  BACK UP FUNC TION GHI JKL MNO
4 5 6

POWER  PRINT CHNG STEP PRS TUU WXY
7 8 9

PAPER FEED TANK SENSR ← - ' →
+/- 0 .

New Paper RUN NONE RS232 Daily Pause



4th 2004

ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 24, 2004 12:01 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.00

REPORT DATE: MAY 24
ISD VERSION 01.00

OVERALL STATUS FAIL
EVR CONTAINMENT PASS
EVR COLLECTION FAIL
STAGE1 1 of 1 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%

CONTAINMENT TESTS

GROSS	95%	0.2	"WC
DGRD	75%	0.1N	"WC
VAPOR LEAK		0	CFH
MAX		0.2	"WC
MIN		-5.0	"WC

COLLECTION TESTS

GROSS	DGRD
A/L(#)	A/L(#)
FP 1: BLEND	
BLKD(34)F 1.23(326)	
FP 2: BLEND	
1.24(44) 1.17(299)	
FP 3: BLEND	
1.20(30) 1.24(239)	
FP 4: BLEND	
1.22(43) 1.24(345)	
FP 5: BLEND	
1.29(41) 1.24(270)	
FP 6: BLEND	
1.21(42) 1.23(398)	
FP 7: BLEND	
1.17(44) 1.17(235)	
FP 8: BLEND	
1.20(73) 1.21(418)	
FP 9: BLEND	
1.25(41) 1.27(295)	
FP10: BLEND	
1.31(64) 1.29(421)	
FP11: BLEND	
1.11(33) 1.28(225)	
FP12: BLEND	
1.20(66) 1.27(470)	

SELF TEST

SETUP TEST	PASS
SENSOR OUT TEST	PASS

(Day 3) Hose blockage alarm

May 24nd 2004

COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND
BLKD(34)F 1.23(326)
FP 2: BLEND
1.24(44) 1.17(299)
FP 3: BLEND
1.20(30) 1.24(239)

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ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 25, 2004 11:59 PM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.00

REPORT DATE: MAY 25
ISD VERSION 01.00

OVERALL STATUS PASS
EVR CONTAINMENT PASS
EVR COLLECTION PASS
STAGE1 4 of 4 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%

CONTAINMENT TESTS

GROSS	95%	0.2	"WC
DGRD	75%	0.1N	"WC
VAPOR LEAK		0	CFH
MAX		1.3	"WC
MIN		-2.5	"WC

COLLECTION TESTS

GROSS	DGRD
A/L(#)	A/L(#)
FP 1: BLEND	
0.00(34)N	1.22(282)N
FP 2: BLEND	
1.09(74)	1.15(332)
FP 3: BLEND	
1.24(15)	1.24(219)
FP 4: BLEND	
1.23(50)	1.25(300)
FP 5: BLEND	
1.17(46)	1.22(279)
FP 6: BLEND	
1.27(44)	1.23(371)
FP 7: BLEND	
1.01(48)	1.14(245)
FP 8: BLEND	
1.17(71)	1.20(413)
FP 9: BLEND	
1.32(38)	1.27(286)
FP10: BLEND	
1.23(59)	1.28(410)
FP11: BLEND	
1.20(46)	1.26(232)
FP12: BLEND	
1.23(72)	1.26(460)

SELF TEST

SETUP TEST PASS
SENSOR OUT TEST PASS

(Day 4) Hose removed from service by bagging

May 25nd 2004

- FP1 has been taken out of service
- Contractor scheduled for May 26th
- No consecutive alarm since effect fueling point has been removed from service

COLLECTION TESTS
GROSS DGRD
A/L(#) A/L(#)

FP 1: BLEND
0.00(34)N 1.22(282)N
FP 2: BLEND
1.09(74) 1.15(332)
FP 3: BLEND
1.24(15) 1.24(219)



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ISD DAILY REPORT

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

MAY 26, 2004 12:05 AM

EVR TYPE: VACUUM ASSIST
ISD VERSION 01.00

REPORT DATE: MAY 26
ISD VERSION 01.00

OVERALL STATUS PASS
EVR CONTAINMENT PASS
EVR COLLECTION PASS
STAGE1 2 of 2 PASS
SELF TEST PASS
ISD MONITOR UP-TIME 100%

CONTAINMENT TESTS

GROSS	95%	0.2	"WC
DGRD	75%	0.1N	"WC
VAPOR LEAK		0	CFH
MAX		1.3	"WC
MIN		-5.0	"WC

COLLECTION TESTS

GROSS	DGRD
A/L(#)	A/L(#)
FP 1: BLEND	
1.28(26)	1.22(247)
FP 2: BLEND	
1.10(63)	1.14(351)
FP 3: BLEND	
1.24(15)N	1.25(193)N
FP 4: BLEND	
1.23(50)N	1.26(256)N
FP 5: BLEND	
1.26(58)	1.24(309)
FP 6: BLEND	
1.14(55)	1.22(377)
FP 7: BLEND	
1.09(54)	1.13(247)
FP 8: BLEND	
1.19(82)	1.22(410)
FP 9: BLEND	
1.16(47)	1.25(288)
FP10: BLEND	
1.15(76)	1.26(428)
FP11: BLEND	
1.10(46)	1.21(229)
FP12: BLEND	
1.17(79)	1.24(457)

SELF TEST

SETUP TEST PASS
SENSOR OUT TEST PASS

(Day 5) Hose repaired

May 26nd 2004

- Hose repaired in the morning
- FP1 Vapor Collection Pass

COLLECTION TESTS

GROSS	DGRD
A/L(#)	A/L(#)

FP 1: BLEND
1.28(26) 1.22(247)
FP 2: BLEND
1.10(63) 1.14(351)
FP 3: BLEND
1.24(15)N 1.25(193)N



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Alarm Simulation – Monthly Report

IV0200
MAY 27, 2004 12:05 AM

Sacramento-2 Assist
7300 W. FRIENDLY AVE
GREENSBORO, NC 27420
1-336-547-5000

ISD MONTHLY STATUS REPORT

EVR TYPE: VACUUM ASSIST
ISD TYPE: 01.00
VAPOR PROCESSOR TYPE: NO VAPOR PROCESSOR

WARNING ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
04-05-23	23:59:00	A/L RATIO GROSS BLOCKAGE	FP 1 BLEND	BLKD

FAILURE ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
04-05-24	23:59:00	A/L RATIO GROSS BLOCKAGE	FP 1 BLEND	BLKD

VAPOR CONTAINMENT DEGRADATION, 75th PERCENTILE 30DAYS ---- 0.30"wcg
VAPOR CONTAINMENT LEAK DETECTION FAIL @2"WCG 7DAYS ---- 8.50cfh
STAGE I VAPOR TRANSFER FAIL, 50th PERCENTILE 20MINS ---- 2.50"wcg

WARNING ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
04-05-23	23:59:00	A/L RATIO GROSS BLOCKAGE	FP 1 BLEND	BLKD

FAILURE ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
04-05-24	23:59:01	A/L RATIO GROSS BLOCKAGE	FP 1 BLEND	BLKD

SHUTDOWN & MISCELLANEOUS EVENTS

DATE	TIME	DESCRIPTION	ACTION/NAME
04-05-24	23:59:12	PUMPS MANUALLY RE-ENABLED	
04-05-24	23:59:01	A/L RATIO GROSS BLOCKAGE	DISABLED FP 01 BLEND
04-05-22	23:59:00	READINESS ISD:PP EVR:PN	ISD & EVR READY
04-05-21	23:59:00	READINESS ISD:PP EVR:PN	EVR READINESS PEND
04-05-20	23:59:00	READINESS ISD:PP EVR:PN	EVR READINESS PEND

SHUTDOWN & MISCELLANEOUS EVENTS

DATE	TIME	DESCRIPTION	ACTION/NAME
04-05-24	23:59:12	PUMPS MANUALLY RE-ENABLED	
04-05-24	23:59:01	A/L RATIO GROSS BLOCKAGE	DISABLED FP 01 BLEND

Thank You

