

Evidential Breath Testing



45 State Drive
Waterbury, VT 05671

PO Box 47
Waterbury, VT 05676

Phone: (802) 244-8788
Fax: (802) 241-5557

Trisha Conti, PhD
Lab Director

Amanda Bolduc, MFS
Alcohol Program Supervisor
amanda.bolduc@vermont.gov
(802) 241-5300

Rob Driscoll
Electronics Technician
rob.driscoll@vermont.gov
(802) 241-5817
(802) 585-0123 (cell)

Marcella Giammanco
Administrative Assistant
marcella.giammanco@vermont.gov
(802) 241-5282

2- Forensic Chemists

- David Patlak, MS
- Jeff Dukette, MS

Vermont Forensic Lab >

- » To certify Vermont law enforcement officers in the proper operation of the DataMaster DMT and enable them to obtain a valid evidential breath sample

Objectives >

- » Brief overview of the science behind infrared breath testing and instrument functioning
- » Proper administration of the observation period
- » Operating the DataMaster DMT and ensuring testing validity
- » Common errors and conditions and proper responses
- » Practice scenarios
- » Hands-on practice tests

Topics >

Why It Works— The Background Science

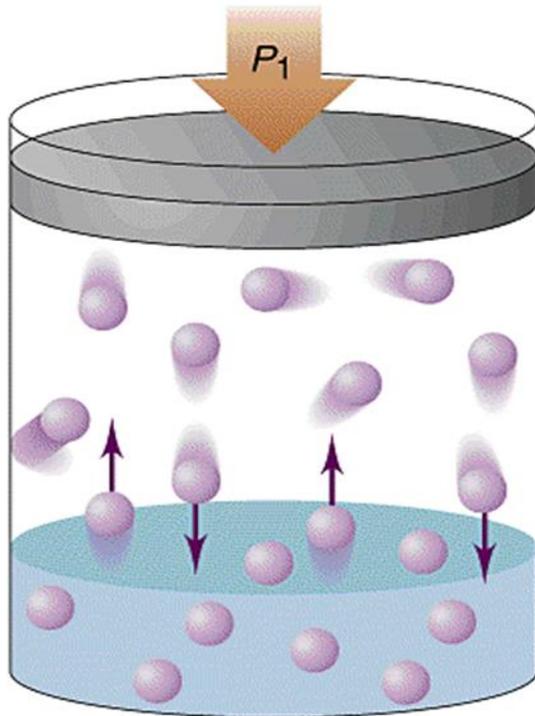


- Ethanol (ethyl alcohol)
 - Ethanol is volatile
 - Readily moves from liquid to air
 - Readily moves from blood to breath
 - The DataMaster DMT measures the concentration of ethanol in **breath**
 - Less invasive than drawing blood



Henry's Law:

In a closed, fixed system kept at a constant temperature, a volatile substance will come to a constant ratio of amounts between a liquid and in the air space above that liquid.



Although humans are not closed systems, the basic process of a volatile being distributed between a liquid and a gas occurs between the blood and air in the lungs when ethanol is present in the body.

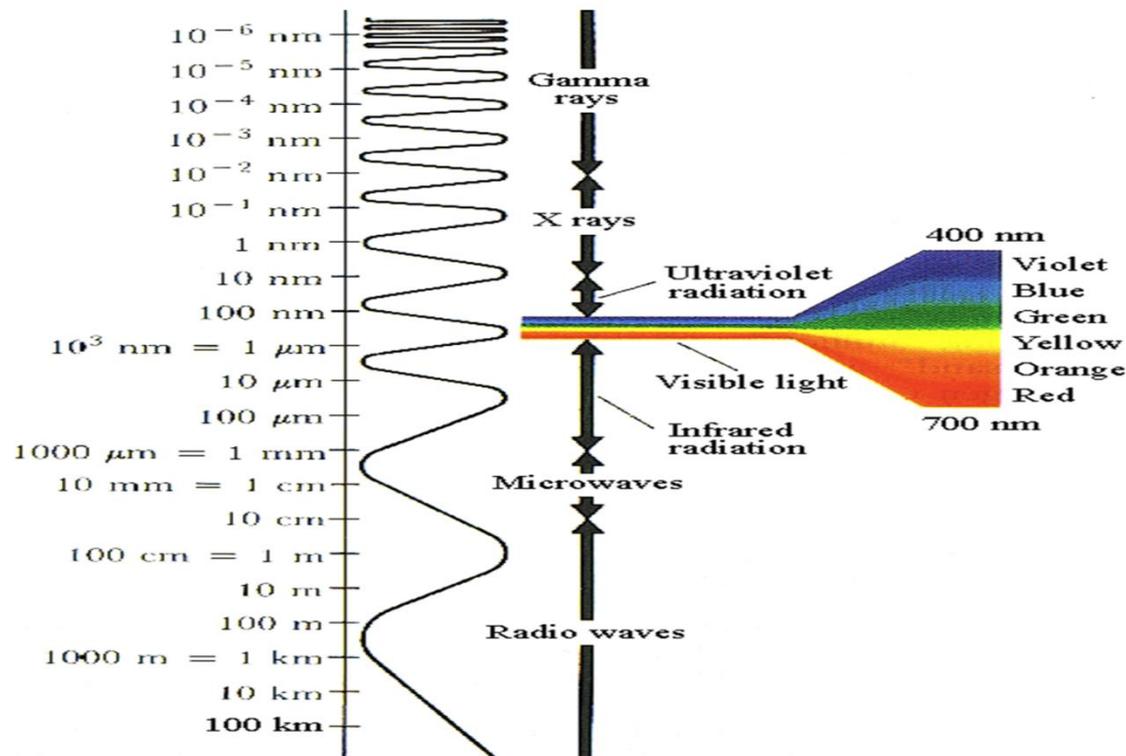
A

Dec 2015



Infrared Spectroscopy

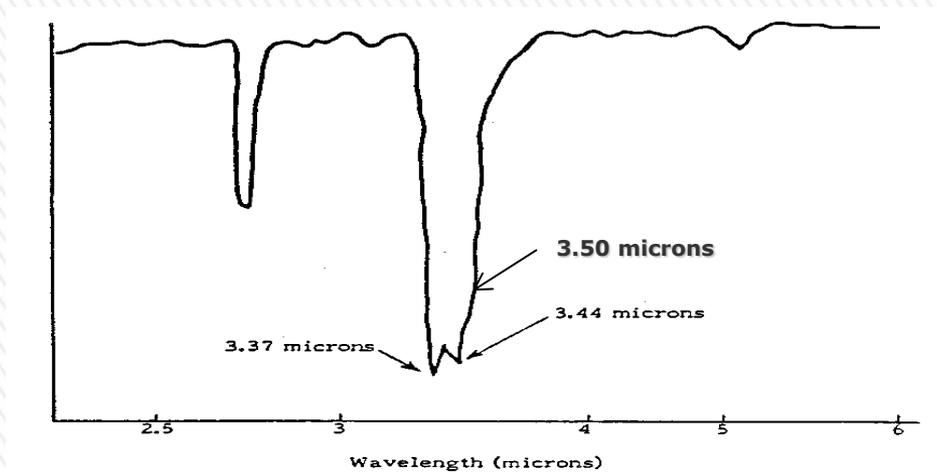
- IR energy is one small portion of the electromagnetic spectrum typically felt as heat.
- In a molecule atoms are held together by bonds
- When subjected to IR energy of the correct frequency the bonds will move from one vibrational state to the next highest

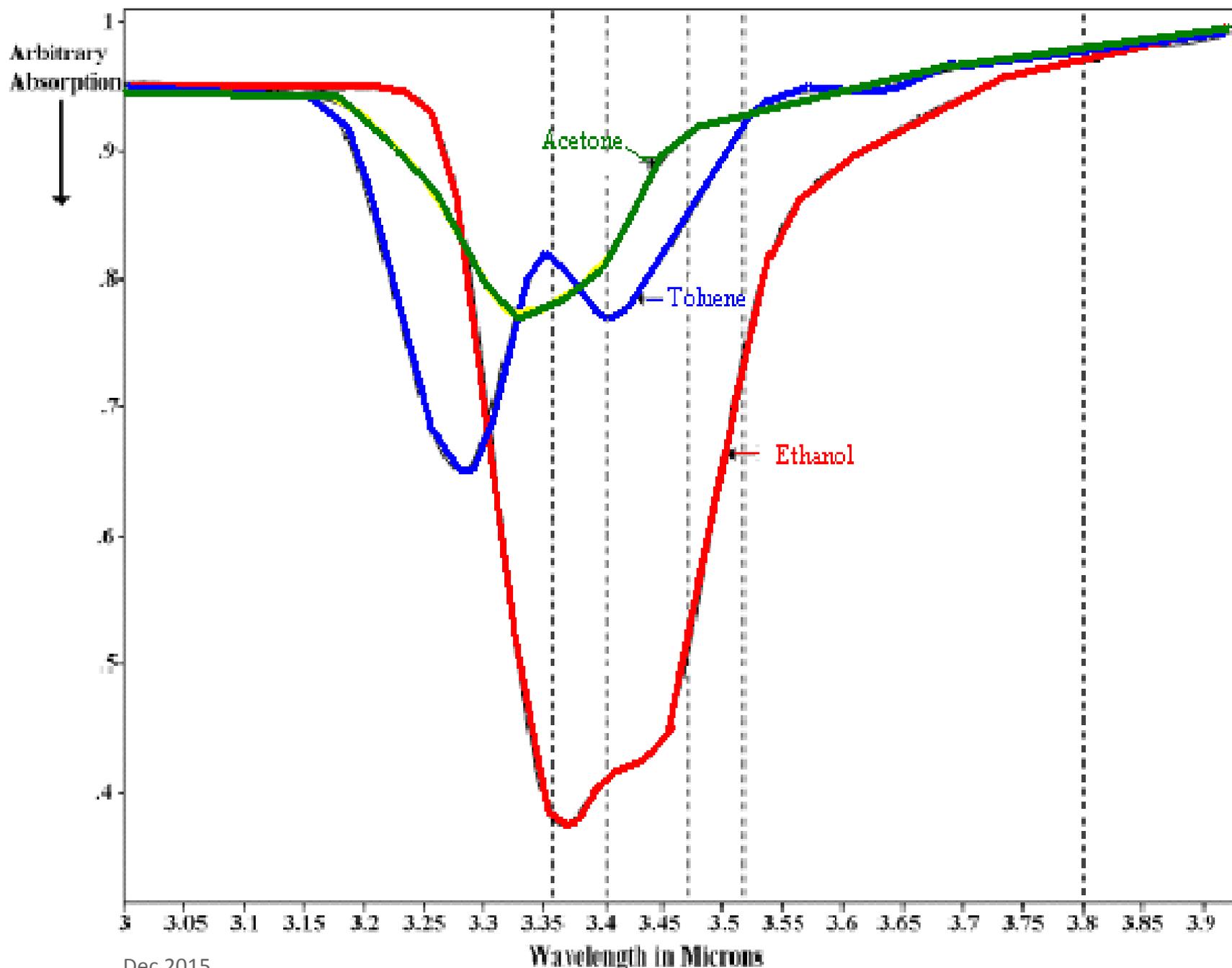




Infrared Spectroscopy

- Different molecules absorb IR energy differently
- The absorbance spectrum exhibited by each compound is also called a “fingerprint”
- The “fingerprints” allow the DataMaster DMT to be specific for ethanol
- The DataMaster DMT targets three specific wavelengths for ethanol
 - 3.37 microns, 3.44 microns and 3.50 microns.

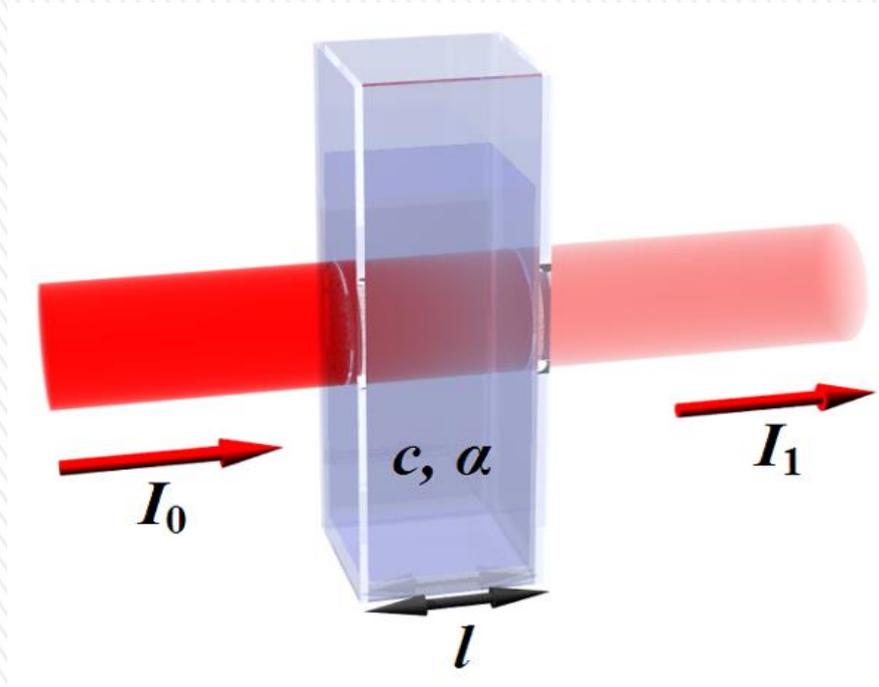






The Beer-Lambert law:

There is a direct relationship between the concentration of a substance and the amount of infrared energy it absorbs.

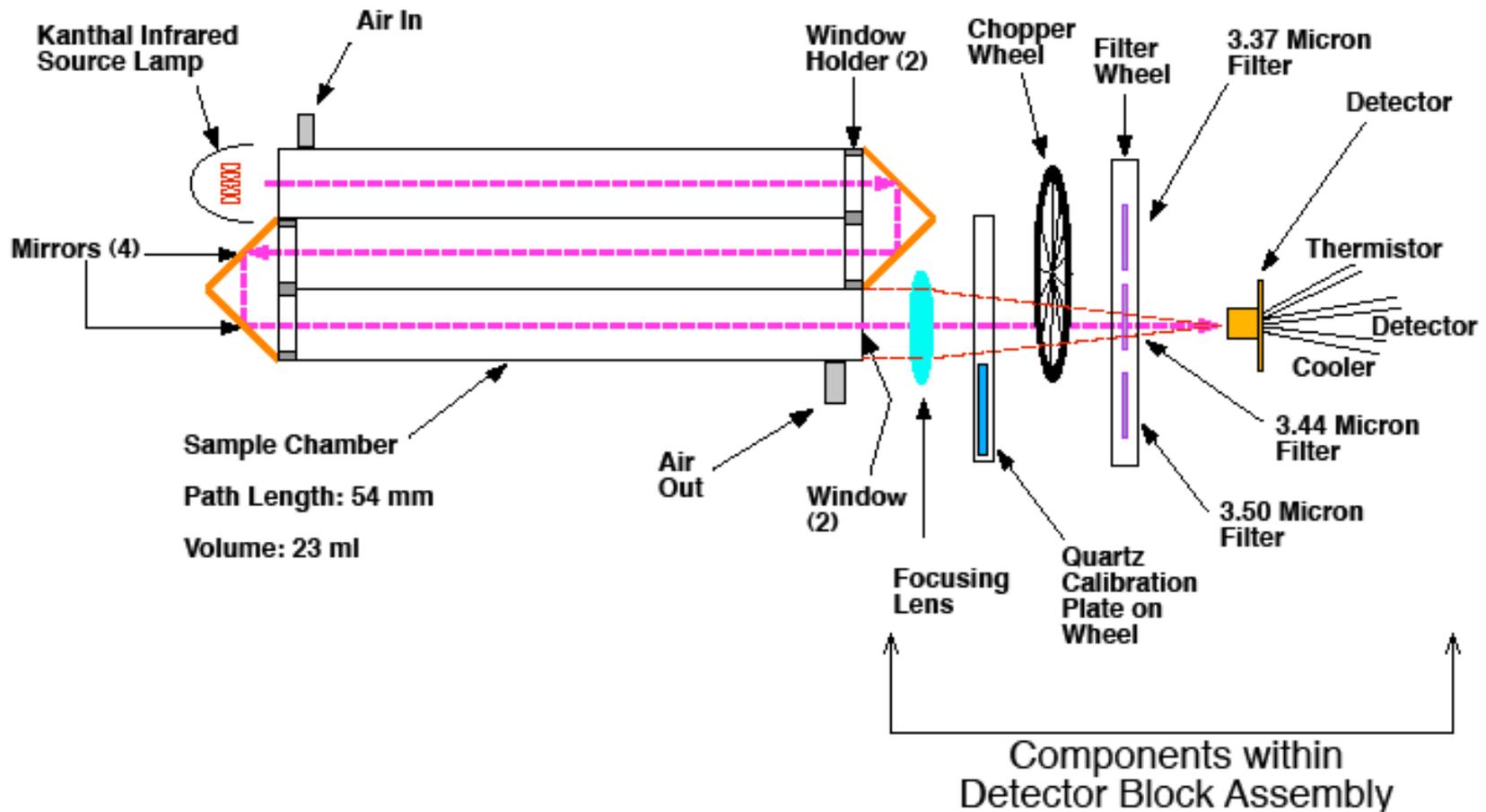


The DataMaster DMT can measure the amount of ethanol in a breath sample by detecting how much IR energy reaches the detector.

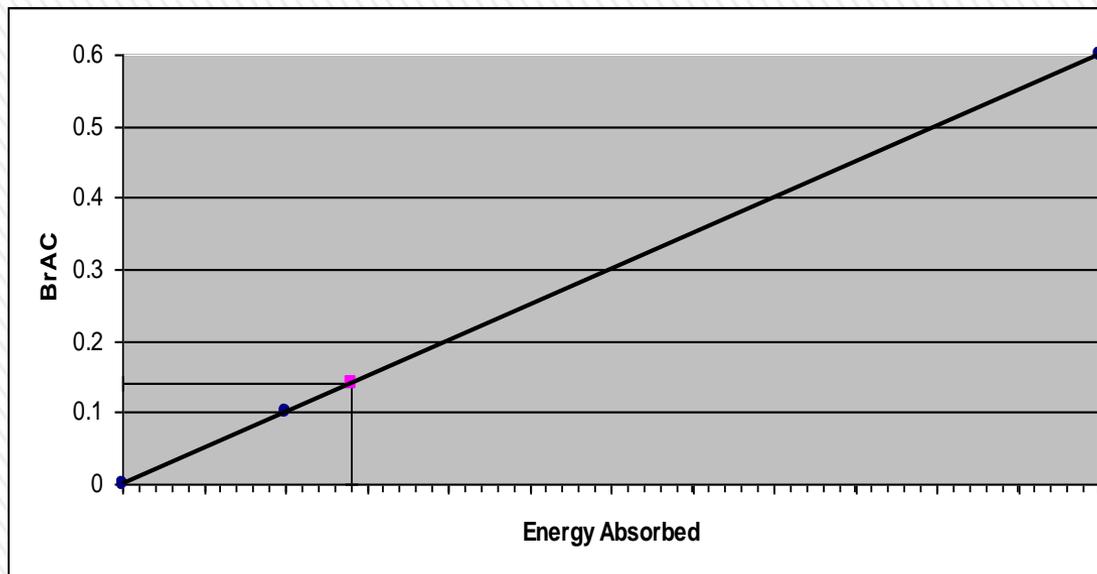
The more ethanol present in the breath, the more infrared energy is absorbed, the less IR energy that reaches the detector.

How It Works— The Science of the DataMaster DMT

DATAMASTER DMT OPTICAL BENCH



- The DataMaster DMT is calibrated with a sample of known ethanol concentration
- Known concentration → known absorption
- IR energy absorbed by the KNOWN sample is compared to IR energy of UNKNOWN sample
- From this comparison the ethanol concentration of the unknown can be determined



Instrument Analysis, Proper Breath Samples



- The DataMaster DMT is designed to sample deep lung air.
- The human body is not a closed system.
- The air in the bottom of the lungs will be closest in concentration to that found in the blood.
- Air in the upper portion of the lungs is constantly being diluted by room air.
- We want to sample the air closest to the blood, highest in concentration.



Reference Only

l/m	g%
24	.12
22	.11
20	.10
18	.09
16	.08
14	.07
12	.06
10	.05
8	.04
6	.03
4	.02
2	.01

Breath Volume Curve

Alcohol Concentration Curve

Reported Alcohol Value

MINIMUM FLOW RATE (Reference Only. Theoretically 3 l/m)

TIME (SECONDS)
(Reference Only)

SAMPLE ACCEPTED

SAMPLE ACCEPTANCE PARAMETERS

1. **MIN. FLOW RATE** MUST BE MAINTAINED
2. **INCREASE** FROM ONE **2 CONSECUTIVE POINT AVERAGE** TO THE NEXT MUST BE $\leq 0.001 \text{ G/210 L}$
3. MIN. TOTAL VOLUME OF **1.5 L** MUST BE DELIVERED
4. **FLOW RATE** MUST **DROP BELOW** MINIMUM

Information on this document is to generally portray, in laymans terms, the nature of how a sample is determined to be one which is accepted by the DataMaster. As values depicted herein are subject to change in any particular version of software, these values may or may not be exactly what is used in any particular instrument.

Instrument Analysis, Proper Breath Samples



- Mouth Alcohol is ethanol that is not a reflection of the ethanol in the blood.
- Drinking or rinsing with alcohol—some remains in the mouth.
- Vomiting—if there is ethanol in the stomach, vomiting may leave mouth alcohol.

Preventing Mouth Alcohol:

- 15 Minute Observation Period
(nothing into the mouth, nothing out)
- Most studies show that mouth alcohol dissipates within 10-12 minutes.

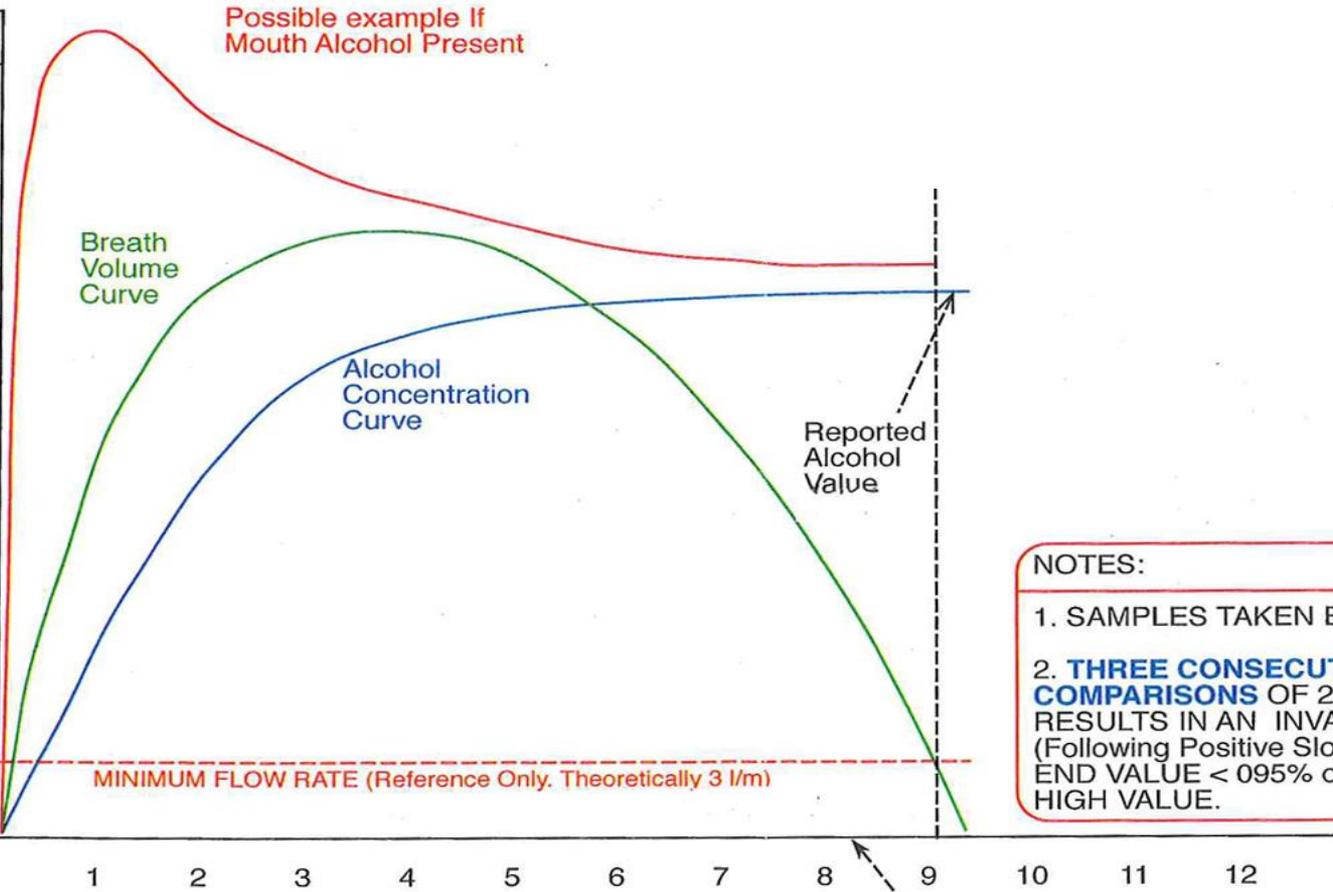
Detecting Mouth Alcohol:

- The DMT will indicate if a negative slope is observed in the ethanol analysis curve.



Reference Only

l/m	g%
24	.12
22	.11
20	.10
18	.09
16	.08
14	.07
12	.06
10	.05
8	.04
6	.03
4	.02
2	.01



- NOTES:
1. SAMPLES TAKEN EVERY .25 SEC
 2. **THREE CONSECUTIVE NEG COMPARISONS** OF 2 POINT AVG. RESULTS IN AN INVALID SAMPLE. (Following Positive Slope) or END VALUE < 095% of PREVIOUS HIGH VALUE.

Information on this document is to generally portray, in laymans terms, the nature of how a sample is determined to be one which is accepted by the DataMaster. As values depicted herein are subject to change in any particular version of software, these values may or may not be exactly what is used in any particular instrument.



How would other substances be present?

- Diabetics and fasting people may produce acetone in their bodies in small amounts. (ketosis)
- Alcoholics have been known to ingest other alcohols besides ethanol.
 - Rubbing alcohol (Isopropanol), Wood alcohol (Methanol).
 - Both are very toxic to humans.
- Inhaling volatile substances which may remain on the breath and absorb IR energy.

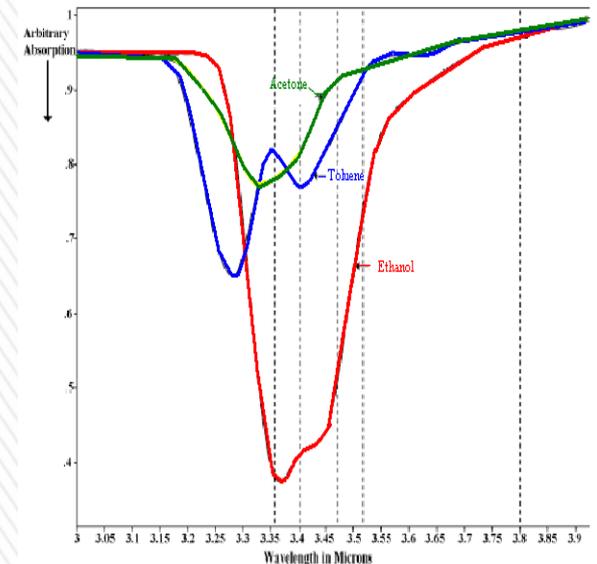


Instrument Analysis, Ethanol vs. Interferences



Different substances have different IR “fingerprints”.

- The DataMaster DMT uses three filters at three different wavelengths to look for ethanol.
- Ethanol generates characteristic peaks at these wavelengths which differentiate it from other substances.
- If the DataMaster DMT detects a ratio inconsistent with ethanol it will report “Interference” rather than a numerical result.
- You will have to get a blood sample.

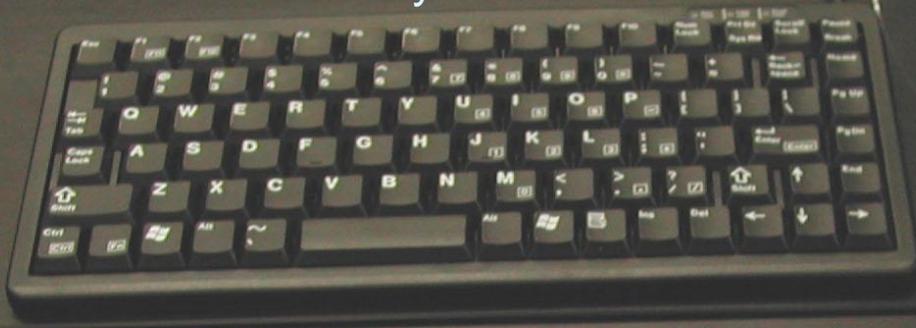




External Components



Keyboard



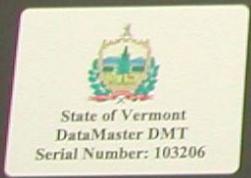
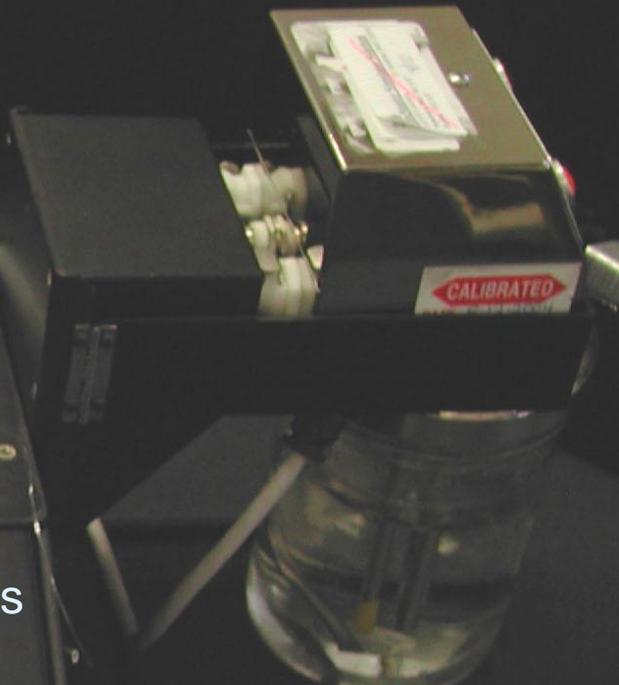
Stylus



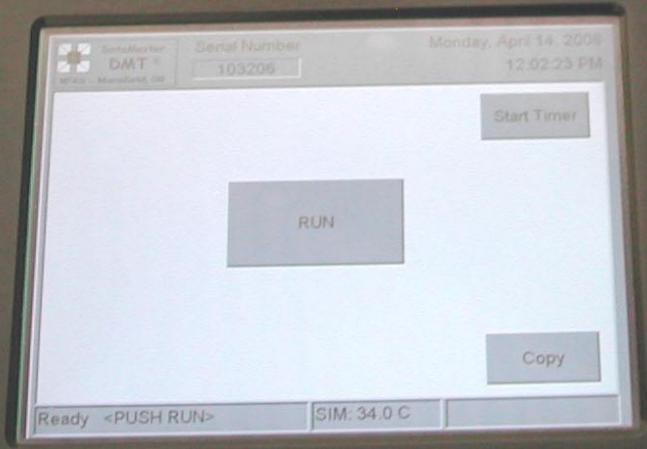
Breath Tube



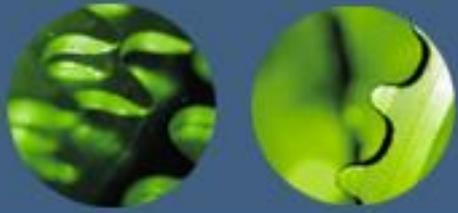
Simulator



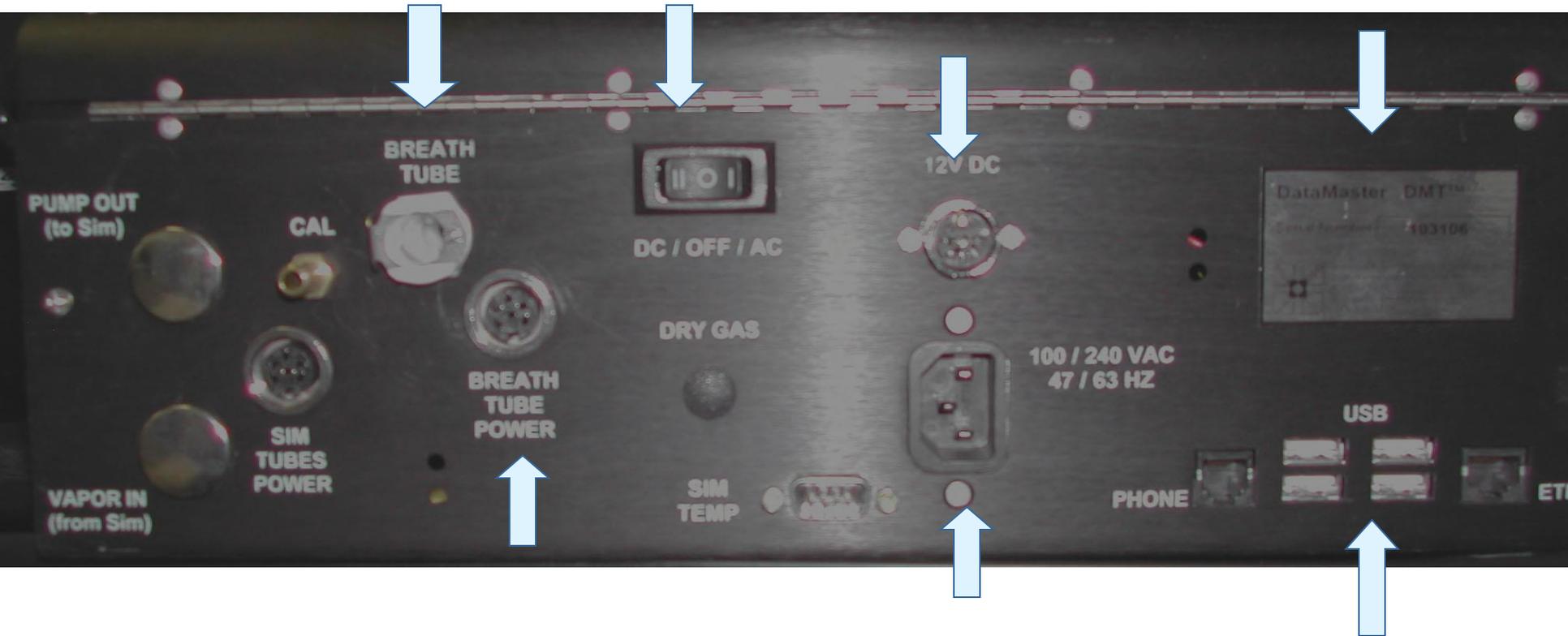
Serial Number Label



Touch Screen



Back Panel





Simulator



Dec 2015

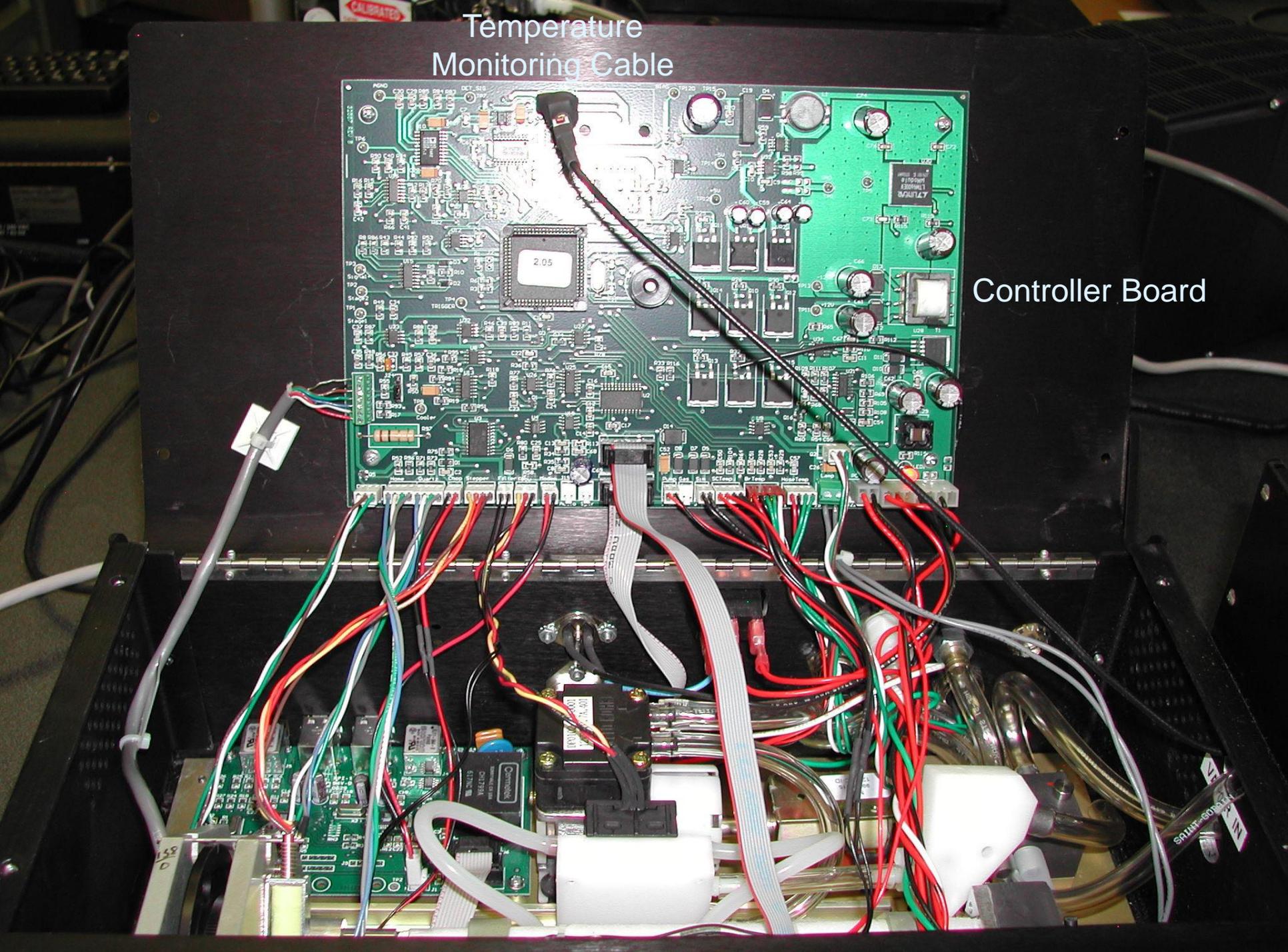


Internal Components



Temperature
Monitoring Cable

Controller Board



Communication Board

5-Way Valve

Simulator Tubes In/Out

Pump

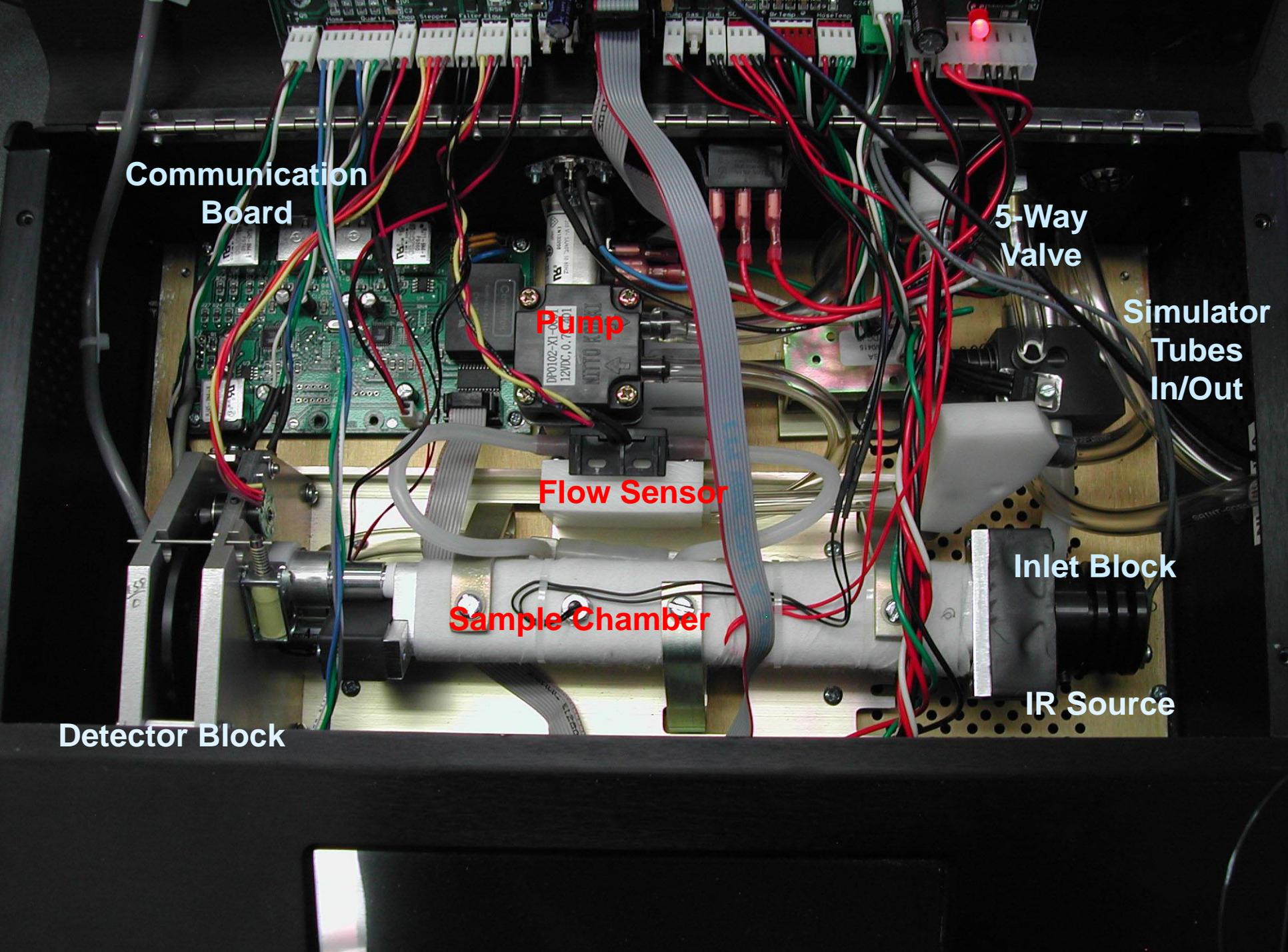
Flow Sensor

Inlet Block

Sample Chamber

IR Source

Detector Block



Operation of the DataMaster DMT

First Steps to Obtaining a Subject Sample



- Clear the screen saver
- Ensure no error messages are present
- The bottom left of the screen should state “Ready” and flash “Push Run”
- If the DataMaster DMT does not indicate it is ready for use, go to another agency.



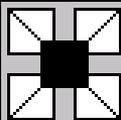
- Check the subject's mouth for foreign objects
- DO NOT STICK YOUR FINGERS IN THEIR MOUTH
- Have the individual remove any foreign objects from their mouth
 - Tongue piercings and dentures are foreign objects
 - However, they do not need to be removed
 - Logan & Gullberg, 1997 – found no effect from mouth jewelry
 - Harding, McMurray, Lassig, et al, 1993 – found no effect from dentures or adhesives



- The DataMaster DMT has a built-in 15 minute observation timer which must be completed before a DUI test can be performed.
- You may begin the 15 minute timer before you press the RUN button.
- If you do not start the timer before you press the RUN button, you will be prompted to start it once all the subject information has been entered.



- During the observation period nothing may go in to, or come out of the mouth
- The subject may not BURP, BELCH or VOMIT
- The timer may be restarted as many times as necessary.
- Each time the timer is restarted, a reason must be given.
- Each restart and the reason for the restart will be printed on the report.



DataMaster

DMT®

NPAS -- Mansfield, OH

Serial Number

102506

April 02, 2008

12:36:22

Start Timer

Time Left:

14:54

Restart

Cancel

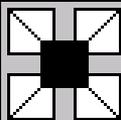
RUN

Copy

Ready

Dec 2015

SIM: 33.7 C



DataMaster
DMT®

NPAS -- Mansfield, OH

Serial Number

102506

April 02, 2008

12:39:02

Start Timer

Restart

Reason For Restart:

Subject | vomited

OK

Time Left:

14:30

Restart

Cancel

Copy

Ready

SIM: 33.7 C



How closely must the subject be observed?

- That is up to your discretion. You, the officer, must be comfortable saying that you observed them for 15 minutes and are confident that the subject did not ingest or regurgitate alcohol.
- Observing does not necessarily mean keeping eye contact for 15 minutes but neither does it mean that you ignore them for 15 minutes while you go somewhere else.
- Many agencies videotape their processing.
- Remember that others will watch your observation period. Will it seem valid to them?
- You must be able to defend it!



As the timer nears completion:

Officer: *“Have you burped, belched or vomited in the last 15 minutes?”*

Subject: *“No”*

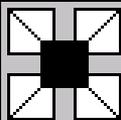
Proceed with the test.

Officer: *“Have you burped, belched or vomited in the last 15 minutes?”*

Subject: *“Yes”*

Restart the observation period.

If this keeps happening it may be considered a refusal. A person can refuse through their actions as well as through their words.



DataMaster

DMT®

NPAS -- Mansfield, OH

Serial Number

102506

April 02, 2008

12:34:12

Start Timer

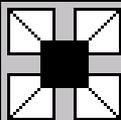
RUN

Copy

Ready

Dec 2015

SIM: 33.7 C



DataMaster
DMT®

NPAS -- Mansfield, OH

Serial Number

102506

April 02, 2008

12:40:47

Start Timer

Type of Test



Check In

DUI

Copy

Ready <PUSH RUN>
Dec 2015

SIM: 33.7 C

- For all suspected DUI subjects, you will select **DUI**
- If a subject fails a PBT during a Check-In and needs a confirmation test, select **CHECK-IN**
- Each selection will lead to a subject information entry screen.

Subject Information

Name (F/M /L)	<input type="text" value="FIRST"/>	<input type="text" value="M"/>	<input type="text" value="LAST"/>		
Date of Birth	<input type="text" value="01/08/1995"/>	Age	<input type="text" value="16"/>	Gender	<input type="text" value="M"/>
License #	<input type="text"/>	State	<input type="text"/>	Guardian	<input type="text" value="Y"/>

Incident Information

Case	<input type="text" value="00XX1234"/>	Oper. Time	<input type="text" value="12:20"/>
Test Reason	<input type="text" value="CHECKPOINT"/>		
Stop Location	<input type="text"/>		
Town	<input type="text" value="WAITSFIELD"/>	County	<input type="text" value="WASHINGTON"/>

Operator Information

Name (F/M /L)	<input type="text" value="YOUR FIRST"/>	<input type="text"/>	<input type="text" value="YOUR LAST"/>
Agency	<input type="text" value="DOVER PD"/>	VTC #	<input type="text" value="VTC"/>

Time Remaining

<input type="text" value="11:11"/>	<input type="text" value="Cancel"/>	<input type="text" value="Restart"/>
------------------------------------	-------------------------------------	--------------------------------------

Subject Information

Name (F/M /L)	<input type="text" value="FIRST"/>	<input type="text" value="M"/>	<input type="text" value="LAST"/>		
Date of Birth	<input type="text" value="01/08/1995"/>	Age	<input type="text" value="16"/>	Gender	<input type="text" value="M"/>
License #	<input type="text"/>	State	<input type="text"/>	Guardian	<input type="text" value="Y"/>

Incident Information

Case	<input type="text" value="00XX1234"/>	Oper. Time	<input type="text" value="12:20"/>
Test Reason	<input type="text" value="CHECKPOINT"/>		
Stop Location	<input type="text" value="CHECKPOINT"/>		
Town	<input type="text" value="CRASH"/>	County	<input type="text" value="WASHINGTON"/>
	<input type="text" value="OTHER"/>		
	<input type="text" value="STOP"/>		

Operator Information

Name (F/M /L)	<input type="text" value="YOUR FIRST"/>	<input type="text" value=""/>	<input type="text" value="YOUR LAST"/>
Agency	<input type="text" value="DOVER PD"/>	VTC #	<input type="text" value="VTC"/>

Time Remaining

<input type="text" value="11:11"/>	<input type="text" value="Cancel"/>	<input type="text" value="Restart"/>
------------------------------------	-------------------------------------	--------------------------------------

Subject Information

Name (F/M /L)	<input type="text" value="FIRST"/>	<input type="text" value="M"/>	<input type="text" value="LAST"/>		
Date of Birth	<input type="text" value="01/08/1995"/>	Age	<input type="text" value="16"/>	Gender	<input type="text" value="M"/>
License #	<input type="text"/>	State	<input type="text"/>	Guardian	<input type="text" value="Y"/>

Incident Information

Case	<input type="text" value="00XX1234"/>	Oper. Time	<input type="text" value="12:20"/>
Test Reason	<input type="text" value="CHECKPOINT"/>		
Stop Location	<input type="text"/>		
Town	<input type="text" value="EAST HAVEN"/>	County	<input type="text" value="WASHINGTON"/>

- EAST HAVEN
- EAST HAVEN**
- EAST MONTPELIER
- EDEN
- ELMORE

Operator Information

Name (F/M /L)	<input type="text" value="YOUR LAST"/>		
Agency	<input type="text" value="DOVER PD"/>	VTC #	<input type="text" value="VTC"/>

Time Remaining

<input type="text" value="11:11"/>	<input type="button" value="Cancel"/>	<input type="button" value="Restart"/>	<input type="button" value="Cancel"/>	<input type="button" value="OK"/>
------------------------------------	---------------------------------------	--	---------------------------------------	-----------------------------------

Subject Information

Name (F/M /L)	<input type="text" value="FIRST"/>	<input type="text" value="M"/>	<input type="text" value="LAST"/>		
Date of Birth	<input type="text" value="01/08/1995"/>	Age	<input type="text" value="16"/>	Gender	<input type="text" value="M"/>
License #	<input type="text"/>	State	<input type="text"/>	Guardian	<input type="text" value="Y"/>

Incident Information

Case	<input type="text" value="00XX1234"/>	Oper. Time	<input type="text" value="12:20"/>
Test Reason	<input type="text" value="CHECKPOINT"/>		
Stop Location	<input type="text"/>		
Town	<input type="text" value="WAITSFIELD"/>	County	<input type="text" value="WASHINGTON"/>

Operator Information

Name (F/M /L)	<input type="text" value="YOUR FIRST"/>	<input type="text" value=""/>	<input type="text" value="YOUR LAST"/>
Agency	<input type="text"/>	VTC #	<input type="text" value="VTC"/>
	<input type="text" value="ADDISON COUNTY SO"/>		
	<input type="text" value="BARRE CITY PD"/>		

Time Remaining

Instrument Operation

- Once all the subject information is entered, press OK to continue.
- A box will pop up which says “Review Data? Yes or No”.
- Select Yes, this will bring you back to the data entry screen. Ensure that all of the information is correct.
- Press OK to continue. The “Review Data?” box will pop up again, this time select No.



Instrument Operation

- Once you have entered and reviewed the data, the DMT will remain idle until the 15 minute timer is satisfied.
- If you did not start the timer before the data entry screen, a box will pop up saying “Start Timer?” Press OK to start the timer.
- The testing sequence is an automated process which will begin once both the timer is satisfied and the data is entered.

- Before analysis begins, the DMT:
 - Checks its components for function
 - Checks the detector response
 - Checks its heated zones
- A purge cycle is completed to clean the sample chamber and breath tube prior to testing.
- Ambient zeroing is performed to adjust the baseline to room air.

Quality Control Checks

- **Blank** tests are run at the beginning of the test sequence and after vapors are introduced.
- Blank tests are run to ensure the sample chamber is free of alcohol.
- Acceptable results will read **0.000**.

- The DMT analyzes a quartz plate for its **Calibration Check**.
- The calibration check is run to confirm the stability of the calibration.
- An acceptable result for the calibration check will display **PASSED**.

Quality Control Checks

- An artificial breath sample is provided by the simulator and is analyzed as a control sample.
- This will be reported as the **Simulator Vapor** with a result indicated on all reports.
- A simulator solution at an approximate ethanol concentration of 0.100 is used.
- The DMT has an acceptance range of **$\pm 5\%$** of the certified value for the simulator vapor.
- The simulator temperature must also read **$34.0^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$** .



Purge

Ambient Zeroing

Blank Test ← 0.000

Calibration Check ← PASSED

Simulator Vapor ← $\sim 0.100 \pm 5\%$

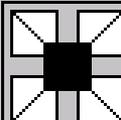
Simulator Temperature ← $34.0^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$

Purge

Ambient Zeroing

Blank Test ← 0.000

If any of the checks do not meet the requirements, the DMT is designed to stop the test sequence.



DataMaster

DMT®

NPAS -- Mansfield, OH

Subject Test

Location of Incident:

Town: ADDISON

County: ADDISON

Test Operator Name: YOUR NAME

Agency: ADDISON COUNTY SO

Obs. Period Start: 15:17

BLANK TEST	0.000	15:33
------------	-------	-------

CALIBRATION CHECK	PASSED	15:33
-------------------	--------	-------

SIMULATOR VAPOR	0.102	15:33
-----------------	-------	-------

BLANK TEST	0.000	15:34
------------	-------	-------

Blank Test 0.000

- The instrument will prompt “Subject take test? Yes or No”.
 - If you press No, a box will pop up with two options, **Refusal** or **Incapable**.
 - If the subject will not take the test, select **Refusal**.
 - If the subject is physically incapable of providing a sufficient sample of air, select **Incapable**. In this instance, the subject may be offered an evidentiary blood test.
 - Once you select **Refusal** or **Incapable**, another box will pop up asking for the reason. You may type in a reason why the subject did not take the test.

All Refusals must be documented this way

Subject Test

Location of Incident:
Town: ADDISON
County: ADDISON

Test Ope
Agency:

Obs. Per

BLANK TE
CALIBRAT
SIMULATO
BLANK TEST

0.000 15:34

X

Will subject take test?

Yes

No

Subject Test

Location of Incident:

Town: ADDISON

County: ADDISON

Test Opera

Agency: AD

Obs. Period

BLANK TEST

CALIBRATIO

SIMULATOR

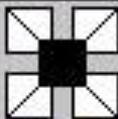
BLANK TEST

Reason for Refusal [X]

Refusal	Incapable
---------	-----------

0.000

15:34



DataMaster

DMT®

NPAS -- Mansfield, OH

Subject Test

Location of Incident: BIG OAK TREE

Town: EAST HAVEN

County: ESSEX

Test Opera

Agency: VE

Obs. Period

BLANK TEST

CALIBRATI

SIMULATOR

BLANK TEST

Reason for Refusal

Reason For Refusal:

Subject Said No

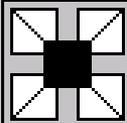
OK

0.000

10:27

- When the instrument prompts “Will subject take test? Yes or No”.
 - Select Yes, the instrument will then flash “Please Blow” and an intermittent tone will be heard.
 - Insert a new mouth piece into the breath tube.
 - Instruct the subject to blow a slow, continuous breath.

- As the subject meets the minimum flow rate, the tone will become constant.
- The subject must provide a minimum of **1.5L** of air. DO NOT tell the subject to stop blowing.
- While the subject is blowing, you will be able to see the breath and ethanol curves in real time.

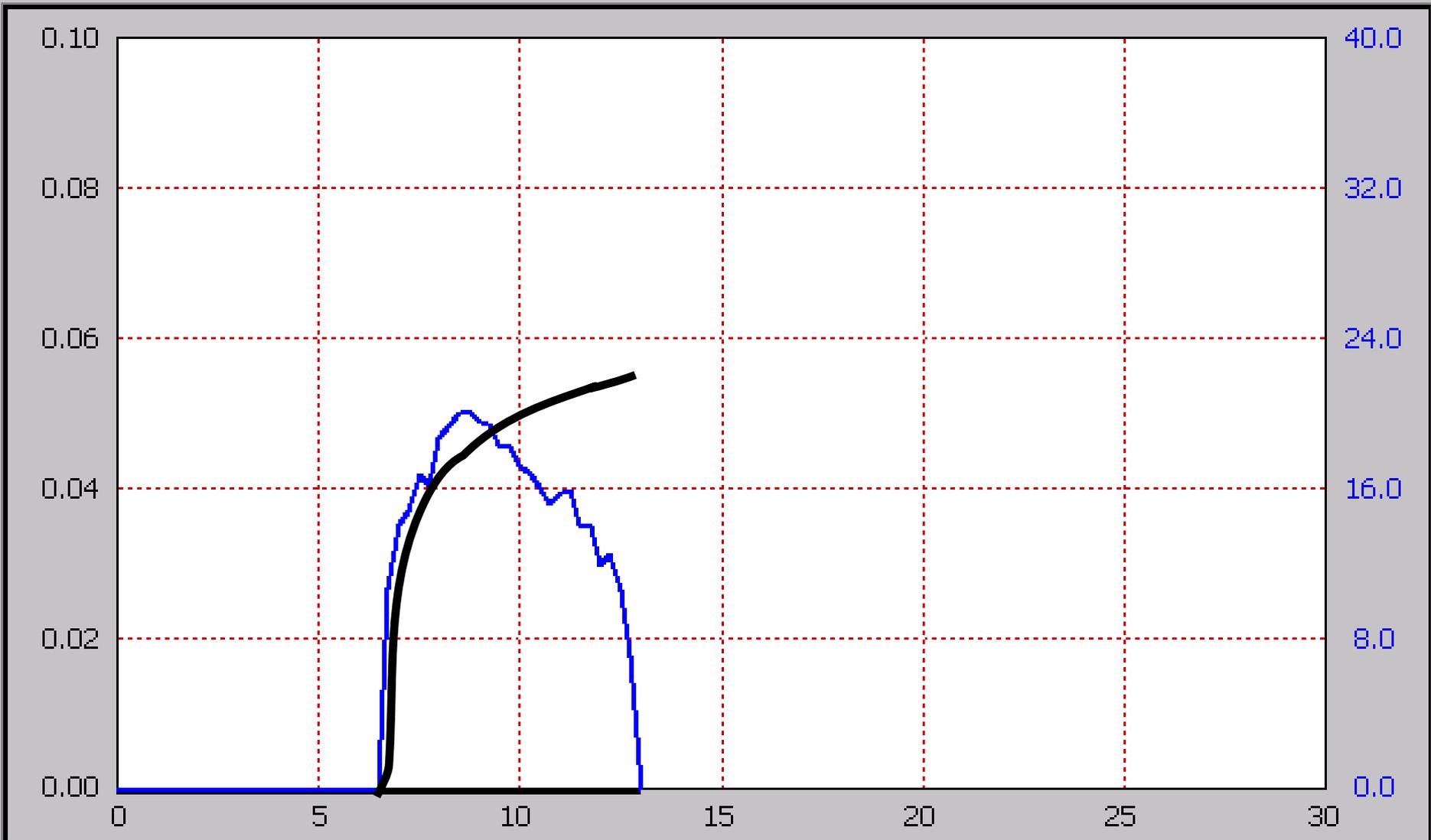


DataMaster

DMT®

NPAS -- Mansfield, OH

Subject Test



Analyzing

0.058

1.5L

- Once an adequate sample is accepted, **immediately** remove the mouth piece from the breath tube.
- The instrument will then purge.

- Once the sample is analyzed, the DataMaster DMT will display the subject's breath ethanol concentration.
- **The officer will inform the subject of their results and ask if they want a second test.**
- The instrument will prompt "Will subject provide another sample? Yes or No".

Will subject provide another sample?

Yes

No

Obs. Period Start.

13:21

BLANK TEST	0.000	13:37
CALIBRATION CHECK	PASSED	13:37
SIMULATOR VAPOR	0.098	13:37
BLANK TEST	0.000	13:38
SUBJECT SAMPLE (Vol=1.6L)	0.082	13:39



0.000



- If **No** is selected, the test sequence ends.
- If **Yes** is selected, the instrument will again perform its quality control checks.

Purge

Ambient Zeroing

Blank Test

Calibration Check

Simulator Vapor

Purge

Ambient Zeroing

Blank Test

Instrument Operation

- After the checks are complete the DataMaster DMT will **again** prompt “Will subject provide another sample? Yes or No”.
 - If No is selected, the test sequence ends.
 - If Yes is selected, a second breath test may be given.
 - The instrument will prompt “Please Blow” and the intermittent tone will be heard.
 - Insert a new mouth piece into the breath tube.
 - Instruct the subject to provide a second sample just as before.
 - Remember to remove the mouthpiece after sample delivery.
- Once the testing sequence is complete, three copies of the report will be printed.
- Verify all information and results are correct.



DUI SUBJECT TEST

STATE OF VERMONT

DataMaster DMT: 300387
Location: VFL
Certification Date: 07/11/2013
Installation Date: 09/24/2013

Date: 11/26/2013
Time: 10:26:13

SUBJECT NAME:
TEST TEST
DOB: 01/01/1980 AGE: 33
GENDER: M

CASE #: 1111
TIME OF OPERATION: 12:00
LOCATION OF INCIDENT:
MAIN STREET
TOWN: WATERBURY
COUNTY: WASHINGTON

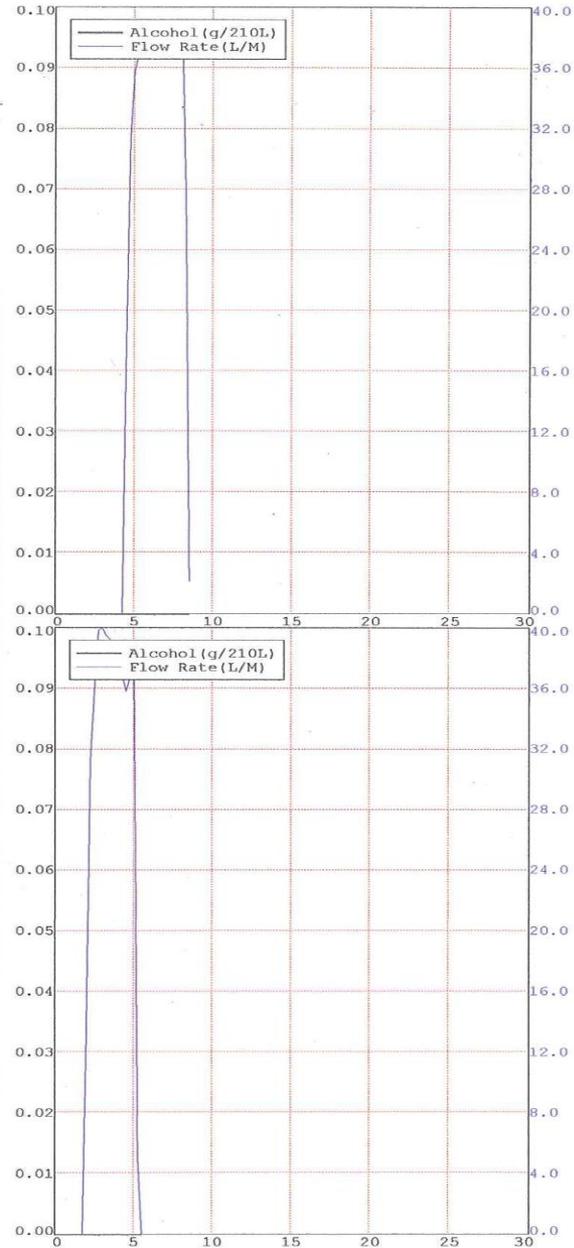
TEST OPERATOR NAME:
ROBERT DRISCOLL
AGENCY: VFL

Obs. Period Start: 10:11

BLANK TEST	0.000	10:27
CALIBRATION CHECK	PASSED	10:27
SIMULATOR VAPOR 34.0°C	0.096	10:27
BLANK TEST	0.000	10:28
SUBJECT SAMPLE (Vol=2.4L)	0.000	10:28

BLANK TEST	0.000	10:29
CALIBRATION CHECK	PASSED	10:29
SIMULATOR VAPOR 34.0°C	0.096	10:29
BLANK TEST	0.000	10:30
SUBJECT SAMPLE (Vol=2.0L)	0.000	10:31

All alcohol values reported in g/210L
Sim. Vapor Concentration 0.100
Sim. Vapor Range 0.095 - 0.105
Lot #: 13-13-100



- Select the **CHECK-IN** box from the “Type of Test” window.
- Check the subject’s mouth for foreign objects.
 - Remember, dentures and tongue piercings are ok
- Complete the data entry
- Review the information

Subject Info

Name (F/M/L)

JOHN

H

SMITH

Date of Birth

01/08/1970

Age

38

Gender

M



License #

State

Guardian



OK

Cancel

Operator Info

Name (F/M/L)

AMANDA

BOLDUC

Agency

MANCHESTER PD



VTC #

123

Check-In Test

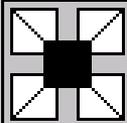
- The DataMaster DMT will perform a series of self checks.
- Once all the checks have passed, the DataMaster DMT will prompt “Please Blow”.
- Insert a new mouth piece into the breath tube.
- Instruct the subject to provide a slow, continuous breath.
- An intermittent tone will be heard. As the subject meets the minimum flow rate, the tone will become constant.

Check-In Confirmation Test

Subject Name: FIRST M LAST
Date of Birth: 09/09/1979 Age: 30
Gender: M
License #:

Test Operator Name: YOUR NAME
Agency: ADDISON COUNTY SO

BLANK TEST	0.000	15:59
CALIBRATION CHECK	PASSED	15:59
SIMULATOR VAPOR	0.103	16:00
BLANK TEST	0.000	16:00

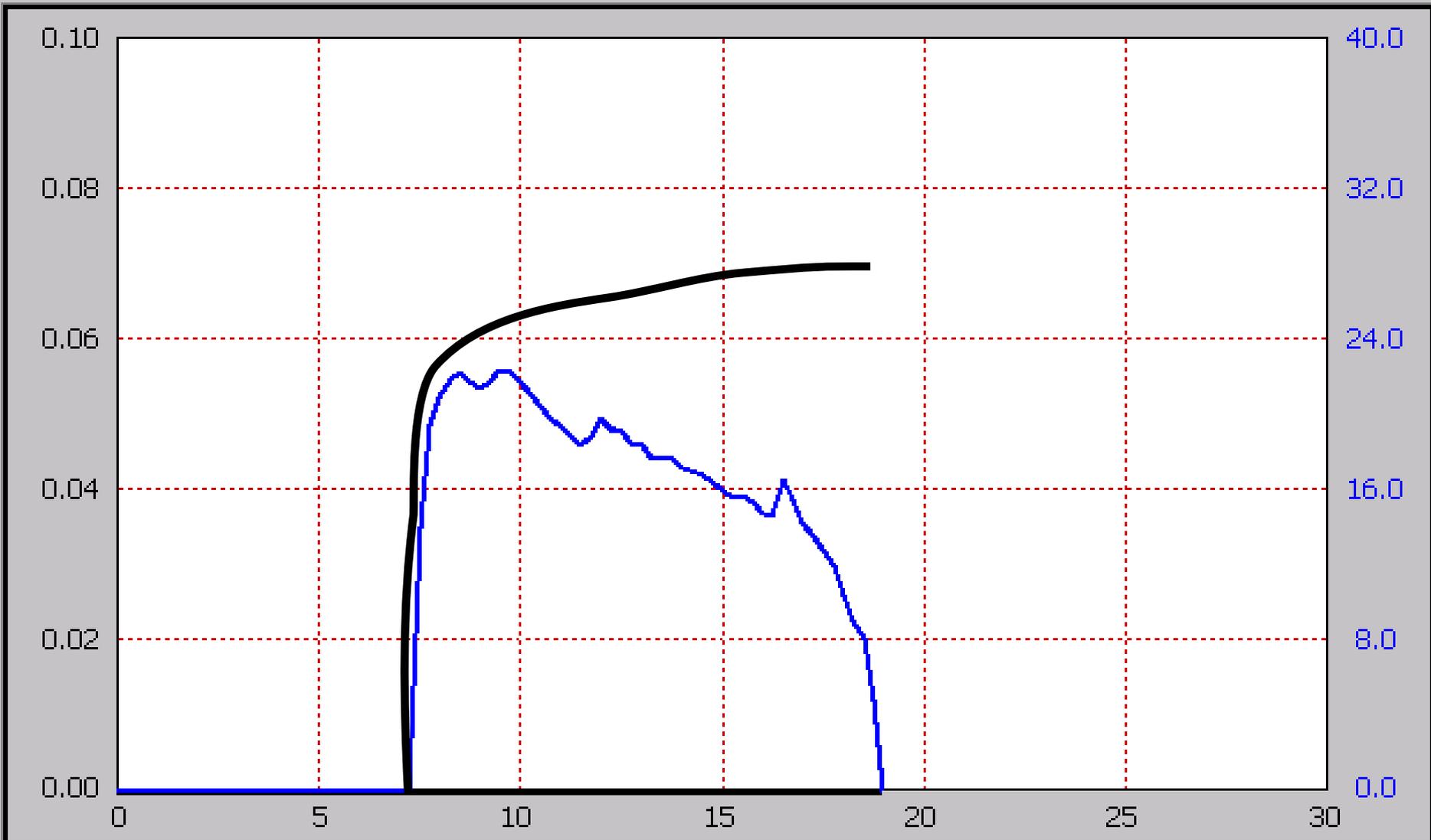


DataMaster

DMT®

NPAS -- Mansfield, OH

Check-In Confirmation Test



Analyzing

0.072

1.5L

Check-In Test

- Once the subject has finished delivering a satisfactory sample, **immediately** remove the mouth piece.
- The Check-In report will print in triplicate.
- See Page 14 in your student manual for an example.

- If the “RUN” button is not pressed within **10 minutes** of completion of the observation time, the 15 minute observation timer must be restarted.
- **Five (5) minutes** is allotted to enter data.
- When prompted to make a decision such as “SUBJECT TAKE TEST? YES or NO” or “USE PREVIOUS DATA?,” **one (1) minute** is allotted.
- When prompted “PLEASE BLOW” the subject will have **two (2) minutes** to provide a breath sample.

Atypical Results and Error Conditions >

WHAT'S YOUR PROBLEM?

Subject Sample → INTERFERENCE

Have the subject provide another sample. It is NOT necessary to wait an additional 15 minutes. If you get the message a second time, take the subject for a BLOOD TEST. This message indicates that there may be a chemical other than ethanol present in the sample and the DataMaster cannot report an ethanol result.

Subject Sample → INVALID

Have the subject provide another sample. It is REQUIRED that you wait another 15 minutes. Remind the subject to provide one steady continuous breath; huffing and puffing into the instrument CAN cause an INVALID sample.

Subject Sample → INCOMPLETE

If the subject PHYSICALLY CAN NOT provide a sample, a blood test can be requested. If the subject WILL NOT provide a sample, you may consider deeming the subject to have refused.

RADIO FREQUENCY DETECTED

A radio frequency has been detected. Ensure all radio transmitters are turned off in or around the processing room and try the test again.

BLANK ERROR or AMBIENT FAIL

Move the subject away from the instrument and draw fresh air into the room, then try the test again.

SIMULATOR OUT OF RANGE

Move the subject away from the instrument and draw fresh air into the room, then try the test again.

For all other issues, please contact your DataMaster DMT Supervisor or refer to the "Infrared Breath Testing Device Student Manual, Oct 2011"
Please be as detailed as possible when relaying errors to your DMT Supervisor.

Dec 2015

DataMaster DMT Supervisor: _____

- If an adequate breath sample has not been provided in the two minute window the instrument will prompt “SUBJECT TAKE TEST? YES or NO”.
 - Select “YES” to try again.
 - Select “NO” if the subject cannot or will not provide an adequate breath sample.
 - The instrument will then prompt “REFUSAL or INCAPABLE?”
 - Select “REFUSAL” or “INCAPABLE” as applicable and type a reason.

Incomplete Sample

- After three failed attempts the instrument will rerun its quality control checks.
- The subject will then have three more chances to provide an adequate breath sample.
- Each failed two minute attempt will be documented on the report as INCOMPLETE.
- See Page 12 in your student manual for example.

- An abnormal breath profile (decreasing ethanol concentration) has been obtained during sample delivery.
- The instrument will print a report documenting the INVALID sample and will return to the “Ready, Push Run” screen.
- The testing sequence must be restarted including a new 15 minute observation period.

- The ratio between the measurements at the three filters is not what is expected for ethanol. Another chemical may be present.
- INTERFERENCE will be displayed in place of a numerical result.
- When the instrument prompts “SUBJECT TAKE SECOND TEST? YES or NO” select “YES” and have subject provide another sample.
- If “INTERFERENCE” is reported again you may have the subject’s blood drawn.

Will subject provide another sample?

Yes

No

BLANK TEST	0.000	15:36
SUBJECT SAMPLE	INTERFERENCE	15:52
		15:52
		15:52
		15:53
		15:54
BLANK TEST	0.000	15:55
CALIBRATION CHECK	PASSED	15:55
SIMULATOR VAPOR	0.102	15:55
BLANK TEST	0.000	15:56

Radio Frequency Detected

- **The DataMaster is not immune to radio frequencies.**
- If a transmission is detected, the testing sequence will be aborted.
- Ensure there are no active transmitters in the processing area.

Ambient Fail / Blank Error

- **Ambient Fail:** The instrument is detecting alcohol in the ambient air.
- **Blank Error:** The instrument is unable to reach zero apparent alcohol.
- For both of these errors:
 - Remove the mouthpiece from the breath tube.
 - Remove possible contamination sources from the processing area.
 - Open windows or use a fan to draw fresh air into the room if possible.

- **Simulator Out of Range:** The simulator solution is outside the $\pm 5\%$ acceptance range.
- **Simulator Time Out:** The simulator took too long to reach plateau while running a Simulator Vapor test.
- For both errors, attempt the test again.

Other Common Errors

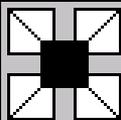
- **Pump Error:** The flow detector does not detect pump operation or the pump speed is incorrect.
 - Ensure the breath tube is free from obstruction during a purge cycle.
- **Suck Back Error:** Air flow is in the reverse direction during a subject sample delivery.
 - Restart the testing sequence. When prompted to use previous timer and use previous data, select “YES”.
 - Instruct the subject again on proper sample delivery.



- **Incorrect Date**
- **Incorrect Time**
- For both of these:
 - When the reports print, place a single line through the incorrect information and write in the correction on all three copies.
 - Mark with your initials and date.
 - Document the discrepancy on your processing form.

Notify your DataMaster DMT Supervisor if these conditions exist

- Ensure the printer is loaded with ink and paper.
- Ensure the USB cable is connected to both the DataMaster DMT and the printer.
- Turn the DataMaster DMT off, ensure the printer is ready and free from errors, then turn the DataMaster DMT back on.
- Press the COPY button to reprint reports.
 - The COPY button will reprint the last report generated, even if the DataMaster DMT is rebooted.
- If, after several attempts, you are unable to get a readable report contact your DataMaster DMT Supervisor. They have access to reprinting prior reports.



DataMaster

DMT®

NPAS -- Mansfield, OH

Serial Number

102506

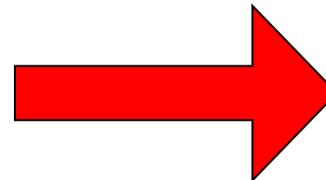
April 02, 2008

12:34:12

Start Timer

RUN

Copy



Ready

SIM: 33.7 C

- When receiving an error message **it is permissible to retry the test**. If the subsequent attempt results in a passing test, the subject's results are acceptable.
- DataMaster DMT Supervisors should be made aware of any and all errors.
- When encountering error messages that cannot be remedied, post "OUT OF SERVICE" on the DataMaster DMT and leave a **detailed** message for your DataMaster DMT Supervisor.
- All reports generated during a testing sequence **including those displaying errors** should be retained with the case file.

Error Conditions

- 23 VSA 1202. d(5) A person who is requested by a law enforcement officer to submit to an evidentiary test administered with an infrared breath-testing instrument may elect to have a second infrared test administered immediately after receiving the results of the first test.
- **If a subject requests a second breath test, get them a second test!**
- **If you have to go to another DMT, get TWO new tests!**

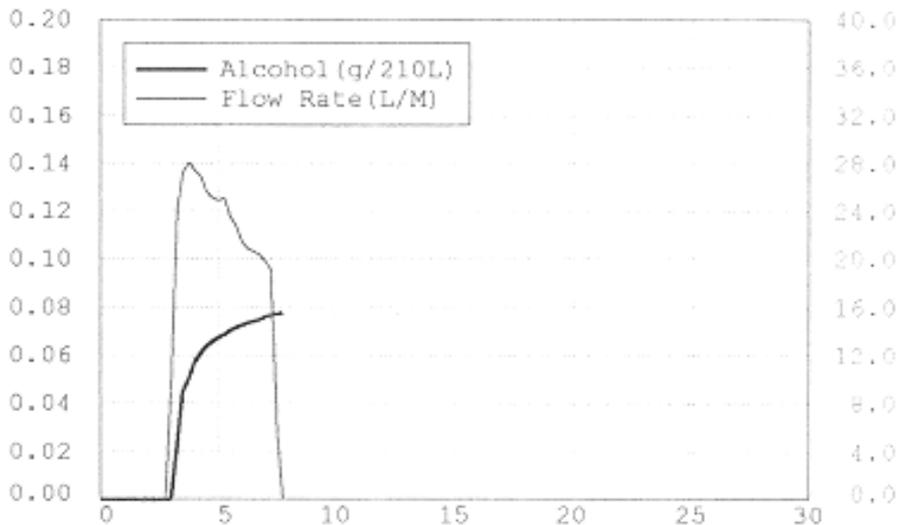
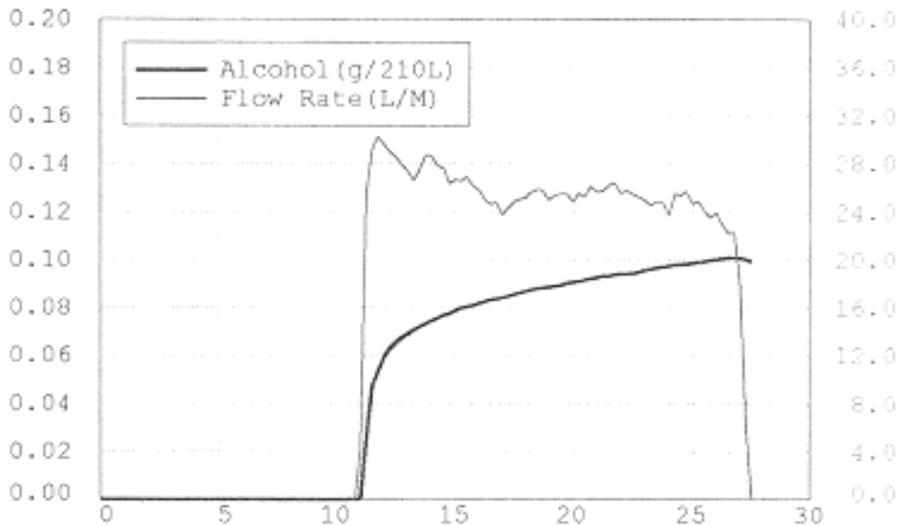
Practice Scenarios >

- 2 Successful Tests with Results Like This:
 - Test 1: 0.119
 - Test 2: 0.138
- Vermont requires one (1) test. There are no requirements that the two tests be within any amount.
- There is human variability in giving a breath sample.
- **Meeting** minimum sample acceptance requirements vs. **exceeding** sample acceptance requirements.

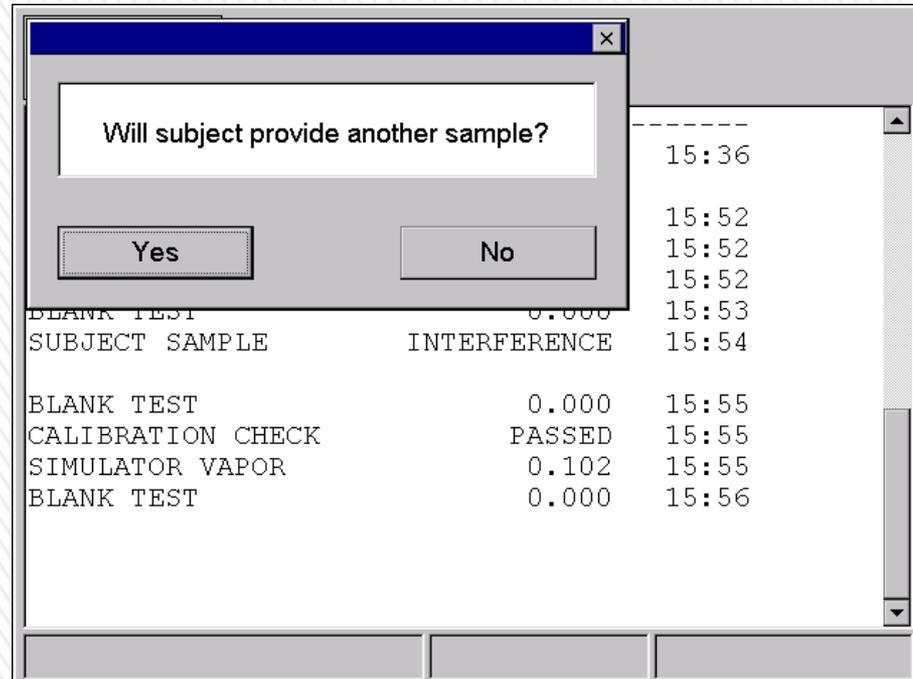
Practice Scenarios

- **One subject**
- **Consecutive breaths**
- **Graph 1: A full breath sample**
 - Approximately 6.8L air
 - Ethanol result **0.099**g/210L

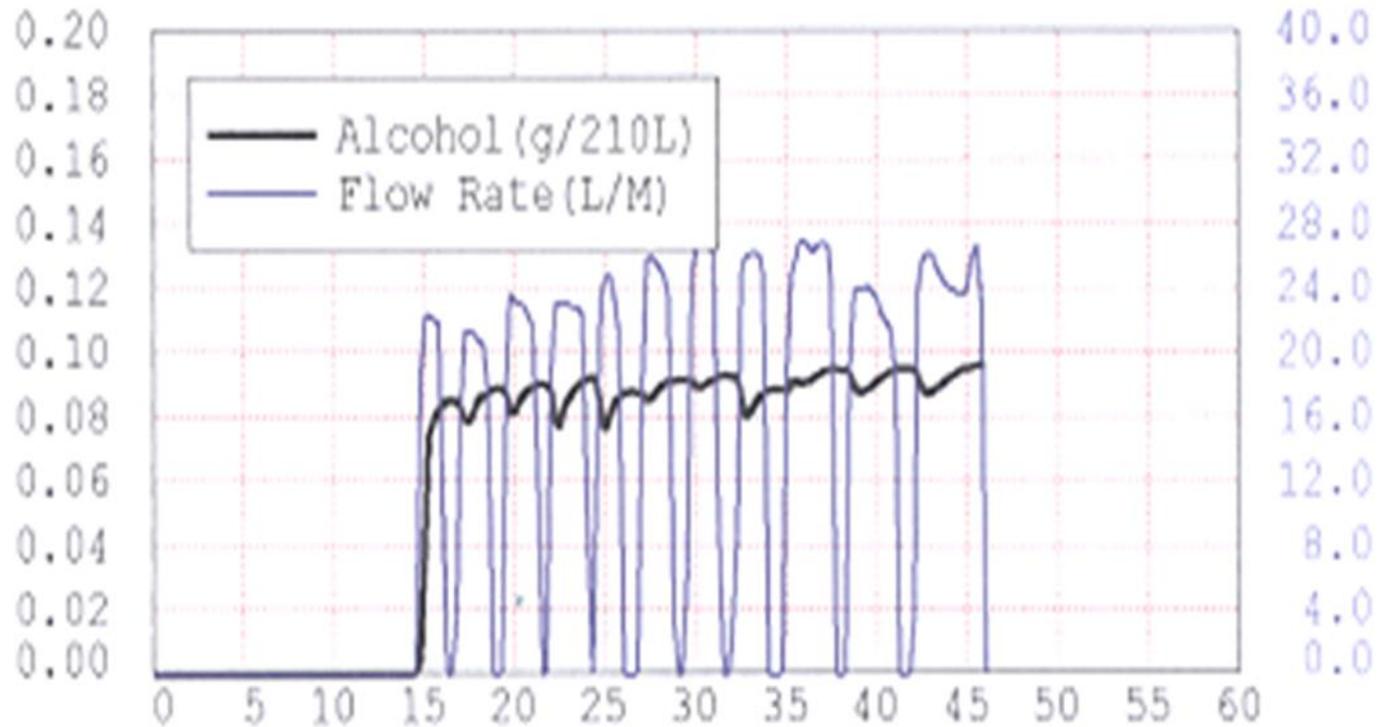
- **Graph 2: A partial breath sample**
 - Approximately 1.7L air
 - Ethanol result **0.077**g/210L



- Successful Test(s) with Result(s) <0.08 g/210L
- Continue with your processing.
- Submit a relation back request to the VFL.
- Remember: There are two types of DUI.
 - Per se >0.08
 - “Impaired to the slightest degree”



- Try the test again.
- If you get INTERFERENCE again, obtaining a blood sample is appropriate.



Incomplete sample with huffing and puffing

- Instruct subject on proper breath delivery
- Improper breathing pattern can lead to Invalid Sample message.

- One Successful Test and an Error Message on the Second Test
- If a subject requests a second breath test, get them a second breath test.
- If you have to go to another agency, get TWO new tests

23 VSA 1202. d(5) A person who is requested by a law enforcement officer to submit to an evidentiary test administered with an infrared breath-testing instrument may elect to have a second infrared test administered immediately after receiving the results of the first test.

Testimony Preparation

You should be prepared to testify to how you knew that the instrument was operating properly when the test was given. The best testimony here would be to state that the DataMaster went through its normal procedures of checking itself and that, based on your training and experience, you observed the instrument to be operating properly.

An officer may be asked to explain how the DataMaster functions. As this class is focused on instructing officers on the proper operation of the instrument and not in the technology behind it, officers should respond to those questions beyond the scope of this training in the following manner:

“I am not qualified to explain that but I do know based on my training and experience that the DataMaster was operating properly at the time of the test.”



TYPICAL TESTIMONY QUESTIONS:

What instrument did you use to obtain a breath test from the defendant?

Have you received training in the operation of the DataMaster?

Are you certified to operate the DataMaster?

Prior to administering the test, did you observe the defendant?

For how long did you observe the defendant?

During this observation, what were you looking for?

After observing the defendant, were you prepared to run a test?

Was the DataMaster ready to perform a test? How did you know?

After ensuring that the DataMaster was ready, what did you do?

Describe how you operated the DataMaster

Did the instrument encounter any problems in completing the test?

Did the DataMaster print an evidence ticket?

How do you recognize the printed evidence ticket?

Things to Remember



- Complete and document the 15 minute observation period.
- Document, document, document.
- Keep all DMT printed reports (including those with error messages) together.
 - 3 copies will print—one for you, one for the subject, and one for the State’s Attorney
- If you get an error message, try the test again.
 - If the next test is successful, that is an acceptable test.
- If you are not sure what to do, ask someone.
 - On-Call State’s Attorney, a supervisor, another experienced officer

Complete the following tests using the data below:

- Two 1-test DUI sequences
- Two 2-test DUI sequences
- One Check-In

Subject Name:	(F) TEST	(L) TEST
Date of Birth:	01/01/1991	
Gender:	M or F	
Guardian	Y or N	
Case:	0000	
Stop Time:	CURRENT TIME	
Test Reason:	OTHER	
Town:	PITTSFORD	
Operator Info:	YOUR NAME	
Agency:	YOUR AGENCY	
VTC #:	YOUR NUMBER	

Practice >