

LESSON PLAN Course: Basic Breath Test Operators Class Title: Introduction to the BT Instrument Effective Date: April 22, 2014 **COVER PAGE** TIME: 2 Hours **COURSE: Basic Breath Test Operators CLASS TITLE:** Introduction to BT Instrument **CLASS LEVEL: Basic Recruit OBJECTIVES:** See page 3 METHOD OF INSTRUCTION: Lecture/Hands-On **METHOD OF TESTING:** Written/Practical **TRAINING AIDS:** Intoxilyzer Model 5000EN and 8000, Evidence Cards, Mouth pieces, PowerPoint, Proxima, Screen, Intoxilyzer 5000EN and 8000 Breath Analysis Instrument **Operators Manual (Kentucky** Model). **REFERENCES:** See page 4 Thomas G. Blankenship COMPLETED BY: DATE: October 2010 Danny J. Dailey **REVISIONS BY:** DATE OF REVISIONS: April 22, 2014

APPROVED BY (signature): DATE APPROVED:



### **OBJECTIVES:**

BASIC

- 7.1 At the end of the session each student will be able to without reference, identify various parts and controls of the instrument as presented in class.
- 7.2 At the end of the session each student will be able to without reference, recall and demonstrate the use of the controls as presented in class.

#### **REFERENCES:**

13. Interview with Herb Belin, 1988, Smith & Wesson Electronics Co., Springfield, MA.

14. CMI, Inc. Intoxilyzer 5000EN Breath Analysis Instrument Operator's Manual (Kentucky Model), 2000, CMI, Inc, Owensboro, Kentucky.

15. CMI, Inc. Intoxilyzer 8000 Breath Analysis Instrument Operator's Manual (Kentucky Model), 2009, CMI, Inc, Owensboro, Kentucky.

16. Clifton, Thompson, Memphis State University. Ultraviolet-Visible Absorption Spectroscopy, 1974, Willard Grant Press, Boston, Massachusetts.

Intoxilyzer Model 5000EN Operators Manual Intoxilyzer Model 8000 Operators Manual



LEC Students, if you are going to take notes, do so on clean blank paper. If you choose to transfer the notes into the operators' manual later, do so neatly. The reason is to be sure that the notes are legible for later recall and avoid defense attacks in court.

Always review this manual prior to going to court for testimony concerning the Intoxilyzer.

When going to court do not take your course notes, if necessary take just the operators manual.

We will be discussing both the 5000EN and 8000 Models.



LEC

Commonly referred to as the "Dial-a-Drunk", these instruments are very accurate when used properly. Stories have been told of manipulating the instrument if the subject was less than cooperative.

Last used in August of 1987

Draeger Safety, Inc.

Breathalyzer® is a registered trademark of <u>Draeger Safety</u>, <u>Inc., Breathalyzer Division</u>. The owner of the trademark is Robert F. Borkenstein and Draeger Safety, Inc. has leased the exclusive rights of use from him. The Breathalyzer® 900 and Breathalyzer® 900A are "approved instruments" in Canada.



LEC

The Breathalyzer is now produced by National Draeger. We in Kentucky use only the Intoxilyzer at this time. Using the name Breathalyzer while testifying, in court, could cause problems if the defense attorney wants you to produce a certification card for a Breathalyzer.

Last used in August of 1987



**LEC:** No longer used in Kentucky, as of 2001, The Intoxilyzer 5000:

- 3 filters, (ETOH, Acetone, H2O)
- The black box was a Simtex unit used to heat the sample chamber and tubes
- The key board was smooth and beeped every time to hit a character
- The diameter of the breath tube was smaller

• Did not have the capability to go into a standby mode and therefore was often turned off by personnel in the jail, delaying the test time.

# Intoxilyzer 5000EN and the 8000

Are instruments, not machines.

Only 5000 EN approved instruments

8000 is in final stages for approval

Manufactured in Kentucky

**LEC** The EN indicates that this is the "enhanced" instrument because it has been modified from the earlier version we discussed.

• Instrument, not machine. Put simply, machines produce something, an instrument measures.

• The only evidentiary breath test (EBT) instruments approved for use in Kentucky. The 8000 is in the final stages of approval.

• CMI is a subsidiary of MPD located in Owensboro, across the street from the police department.



LEC Observation period at the site of the breath test will be 20 minutes. It is important to get your observation time from the instrument display.

Auto zeroing is done three times (each time the instrument does an "Air Blank"). It insures there is nothing in the sample chamber that would compromise the breath test reading.

Calibration of the instrument is performed by the technician. This must be done once a month, not to exceed 45 days. There are so many instruments in the state and only a limited number of technicians, thus the 15 day window.

The controlled analysis is done by the simulator.

Replicated test, other states do replicated breath samples, we will discuss this more later in the lesson.



- **LEC:** The instrument will take approximately 30 minutes to become operational from a cold start. A cold start is when power to the instrument has be shut off for an extended period of time.
- **NTF:** The instrument should never be turned off by an operator or other persons except in an emergency.
- LEC: The instrument will go into a "standby mode" after a determined period of time (0-240 minutes). This time is set up by the technician. It will take the instrument 2.5 minutes to become operational from the standby mode. The observation time can be taken immediately when the instrument comes from the standby mode to begin your observation time. This will be documented on the bottom of the evidence card you are using for the test.

**LEC:** You can identify if the instrument is in the standby mode by looking for the red light emitting diode (LED) located under the power button. If the light is on there is power to the instrument. Other identifying clues would be the simulator, if plugged into the back of the instrument the light or lights (power and heat) will be on and the paddle in the simulator jar will be turning.

There are agencies that have the instrument set so it will not go into standby mode. Past problems with "Out of Tolerance" tests have forced technicians to set the instruments in this manner to prevent problems for officers in court.

**NTF:** Some judges have ruled that once an instrument produces an out of tolerance test that it must be looked at by a technician before another EBT can be given.



- **LEC:** It takes approximately 20 minutes from a complete power shut down to warm up.
- **NTF:** If the instrument is unplugged from 120 volts but has a charge on the battery, this does not apply as long as the battery maintains a charge and the battery switch is on.
- **LEC:** Even when this instrument is in standby mode the display will alternate between three different screens. One of these is the time. Operator will document the observation time as directed before pushing the start test button.

It takes approximately 1 minute to warm up from the standby mode. The instrument will count down one minute from the time the start test button is pushed. It will then go into the self diagnostic mode that takes less than a minute.



- **LEC:** The Intoxilyzer 5000EN has the capacity to hold 120 tests.
- **NTF:** Every time the instrument goes into the air blank mode it is considered a test. This even means that bringing the instrument out of S/B mode constitutes one test.

**LEC:** When the operator runs a test that is 116 or more, the instrument will indicate in the scrolling digital display "Memory Near Full". It will not indicate which test by number, just memory near full. It is recommended that you then contact the technician so he can download the instrument's memory.

When an operator attempts to run test 121 he will get a "Memory Full" indication in the display.



**LEC:** The model 8000 does have a memory. The size far exceeds any instrument in the past so no numbers were provided. Limited memory will no longer be a problem for you.

The instrument memory will be downloaded each time the technician checks the instrument.

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**LEC:** A breath alcohol concentration test shall consist of the following steps in this sequence for Kentucky Intoxilyzers:

<u>Ambient Air Analysis</u>, the instrument is drawing in air through the mouthpiece, the external breath tube, the internal breath tube, the sample chamber and out the back of the instrument. It must get a reading of .000 to move to the next test or complete the testing sequence.

<u>Alcohol Simulator Analysis</u>, the instrument is drawing vapor from the top of the simulator (wet bath) or from the pressurized tank (dry gas). A reading within tolerance must be met to continue to the next test. **LEC:** <u>Subject Breath Test</u>, during the three minute please blow mode the subject must meet all four parameters for the instrument to provide a breath analysis.

The Ambient Air Analysis happens three times. They all must read .000 for the operator to get a completed test.



LEC: A breath alcohol instrument shall be accurate within plus or minus 5 thousands alcohol concentration units reading to be certified.

This means the instrument must during the cal check mode read the solution be it wet bath or dry gas within 5 thousands of a .080. The reading can be anywhere within .075 to .085, to be accepted. If the reading is outside of those parameters the instrument will stop the test, run an air blank and provide the operator with a "Out of Tolerance" test result.

## TIME: 1 Hour

# Alcohol Breath Simulator

- Re-circulates the alcohol vapor
- Mixed by KSP Lab Technician
- Temperature 34° C
- Checks accuracy of instrument

## Dry Gas Cylinder

- The alcohol vapor
- Mixed by manufacture
- Not heated
- Checks accuracy of instrument

### LEC: Wet Bath Simulator -

•Re-circulates the alcohol vapor

•Mixed by KSP Lab Technician – to read .080

•Temperature 34 C

•Checks accuracy of the instrument – not calibrating the instrument

#### Dry Gas Cylinder

- The alcohol vapor
- •Mixed by manufacture CMI or other supplier .080
- Not heated

•Checks accuracy of the instrument – not calibrating the instrument



**LEC:** <u>Heated Breath Tube</u> – Reinforced rubber tube through which the subject blows.

Make sure it feels warm to the touch, the temperature is unknown; this should be done before you start your test. It is heated to prevent condensation from forming inside the tube as a subject blows during the please blow mode. If condensation was allowed to form it would include alcohol molecules, thus providing a less than accurate results.

If it is not warm to the touch check the plug at the base of the tube. It must be plugged in. It may take up to 30 minutes to completely heat up if it was unplugged.

The breath tube also acts as a RFI (radio frequency interference) antenna. For this reason you should leave the breath tube in the cradle unless the subject is blowing into it.

**LEC:** <u>Mouthpiece</u> – A disposable, clear plastic trap which fits into the end of the breath tube. Notice that it is multi-chambered to prevent the subject from spitting directly into the breath tube. When putting the mouthpiece into the breath tube DO NOT use extreme force. A twisting action is sufficient to create a good seal.

Always put the mouthpiece on prior to pushing the start test button. This is to ensure that there is nothing in the mouthpiece that would contaminate the subject's breath test because of the air blanks before the subject blows through the mouthpiece. If there was something in the mouthpiece it would have been detected during the air blanks and the instrument would have stopped the test and printed a card that read "Check Ambient Condition".

NTF

There were defense attorneys in other states that were arguing that the mouthpiece contained hydrocarbons or other substances that interfered with the inferred light and cause his client's breath test read higher than it actually was. **LEC:** Use the plastic bag to put the mouthpiece on out of consideration for the subject; do not leave the bag on the mouthpiece. Use the plastic bag to take the mouthpiece off of the breath tube after the last air blank. Again griping the mouthpiece and merely twisting it will assist in its removal.

<u>Scrolling Digital Display</u> – The first thing you notice is the screen running underneath. This is also part of the RFI detection system. The display is a sixteen character alphanumeric readout. This is the only acceptable place for the operator to get the start observation time from. By using the time on this display you prevent any question about the 20 minutes required prior to running a test.

The display will serve several purposes throughout your test. These will be discussed in detail as we work through the class.

<u>Start Test Button</u> – The green start test button actually has four (4) purposes. These will all be discussed in detail later.

<u>Simulator</u> – Supplies the sample used during the cal check mode, sealed system, good for about 200 tests before needing to be replaced.

<u>**Red LED**</u> – When this is illuminated and the scrolling digital display is dark (no words scrolling) is an indicator that there is power to the instrument and it is in the standby mode as previously discussed. If the LED is dark, power is off to the unit completely.

**<u>Power Button</u>** – This controls the power to the unit and the power to the external socket in the rear (usually where the simulator is plugged in). There is a spring loaded plastic cover to prevent accidental shutting down of the instrument.



**Simulator Exhaust/Intake Hoses** - Delivery hose (short) and a return hose (long), this makes it possible for the alcohol vapor to re-circulate during the cal check mode. If the short hose were left detached you would receive an "Out of Tolerance – Fails Low Limit" card after it attempted to run the cal check. If the long hose was left detached the solution would lose its alcohol level fairly quickly due to evaporation. These hoses are also heated.

LEC:

Checking of these hoses is strictly a visual check to insure they are attached.

<u>Key Board Connection</u> – The 5 pin canon type plug is keyed to go in only one way. It however does not lock into place and after moving the keyboard it is possible for the connection to work loose. You will be able to tell if it comes loose because all or part of the keyboard will not function. **LEC:** <u>Modem Connection</u> – The instrument has the capability to be connected to a phone line and be remotely accessed. However this is not used in most locations.

<u>Serial Number Plate</u> – This is one of two places the operator can confirm the instruments' serial number. Here and the evidence card.

Address the defense attorneys attempt to discredit officers by having them testify that an instrument that they brought into the courtroom was the unit that they used to test their subject. If the officer agrees without checking, the defense attorney will open up the case and there is nothing inside. This looks bad in front of a jury. Have the officer take his evidence card and check the number on the card against the number on the back of the instrument.

<u>Main Power Plug</u> – This is plugged into the standard 110/120 wall outlet. It is possible to unplug it from the back of the instrument. If you can't get power to the instrument check this connection.



# **LEC:** Removable Key Board – Can be detached and moved for operator's comfort.

Display – Identifies current mode, test results, incorrect operational procedure, diagnostic fail.

Breath Tube – Is longer and more flexible, should remain rapped around the mouthpiece cup except when the subject is providing a breath sample.

Mouthpiece storage, keeps mouthpieces warm by having the breath tube rapped around the storage.

Start Test- bring from standby, start test, invalidate test, used if a diagnostic fail occurs.

Paper feed, used to feed paper from the internal printer.

Pressing it once feeds approximately 1/8".

**LEC:** Power LED – Lets the operator know that the instrument has power provided. This LED stays green, but will be orange until it warms up.

Internal Printer – There is not pressure sensitive paper with this instrument. It uses a thermal printer and prints one copy of the test results. Notice the teeth at the bottom of the opening. This is used to tear the test results evenly after printing is complete. If you tear the paper up, when the next test is run the paper will feed inside the printer cover. Later we will discuss changing paper.



**LEC:** Main power – Located just over the power cord connection.

Serial number plaque – You will find a KSP ID number on your instruments also. Be sure that you get the serial number from this plaque or your evidence slip.

Battery – Power is just to the right of the serial number plaque.

Series of connections under the lip to include, printer, other USB, Simulator, Ethernet, and a modem connection.



**LEC:** Activates both instruments from the standby mode, if that is indicated by the display. The 5000EN will be completely dark. The 8000 will rotate through three screens and one will indicate standby.

Start a test, after the subjects 20 minute observation period and the operator has attached the mouth piece the operator would push the start test button.

Invalidate test, if you need to stop a test after you have already inserted a card or began inputting data, i.e., the subject gets sick or passes out and you can not administer a breath test.

The operator's first course of action if an error occurs on the 5000EN or diagnostic fail on the 8000.



**LEC:** Key placement is identical to your computer/typewriter so if you are a typist there is no need for adjustment.

Backspace key is used to correct a typing mistake; you have to press the key for every character space. On the 8000 you have to use the arrow key to place the curser and then use the backspace key to delete the mistake.

"Enter" stores your typed data, then moves to the next field. If the instrument fails to move to the next field check your data to insure it is correct, i.e., DOB.

F-1 key is used to print a duplicate copy of the last test completed.

# Instrument Errors/Diagnostic Fail

Alternating tone

- Message in the display
- Self diagnostic
- Second message
- No evidence printed

**LEC:** Instrument Error is described for the 5000EN. Diagnostic fail is what the manufacture described for the 8000. Both are essentially the same and the operator will take the same steps for both instruments.

The operator will hear a high/low tone. The tone is different on each instrument.

The error message will stay in the scrolling digital display until the operator pushes the start test button.

The initial response of the operator will be to push the start test button and put the instrument into the self diagnostic mode. This takes about 2 - 3 minutes.

If you get an error message the second time, do not turn the instrument off. Put a note on the instrument stating that it is out of service and contact the technician or your department contact.

The instrument is not going to print an error card because you never got to the insert card mode.



**LEC:** The operator will again hear the low/high tones.

The message will show on the digital display, only this time the message will not stay in the display. The instrument will go into the air blank mode and the message will disappear.

Always check your evidence card, just in case you missed something in the display. If you read the last paragraph of the procedure sheet and then determine that you need further tests, it could be too late. Remember, your creditability is all you have.



## LEC:

# <u>5000EN</u>

The card is made up of three copies; it is pressure sensitive (carbonless) paper.

When you push the start test button the "Insert Card" mode will begin and last for thirty (30) seconds.

If the card jams secure both exposed corners and ease the card out, do not grab it and just pull. This can cause damage to the printer and may put the instrument out of service.

If the card is prematurely pulled from the instrument you can not reinsert that card or another card to get those test results. **LEC:** The serial number is found on the third typed line on the far right.

Enter all breath test cards into the Breath Alcohol Log Book, as was shown during the Introduction to Breath Testing class. If you invalidate or abort a test during the data entry stage you will not receive a test card/slip, so you will not need to log it.

#### 8000 Only

Slip, just like a cash register receipt.

Serial number is also found on the third line, far right

F-1 will provide a duplicate copy of the last test completed.

This paper is light sensitive; if left in direct light over a period of time it will fade.

Again remind students about cash receipts that have been left in the light.



LEC:

This sheet should be on the front of or at least posted next to the Intoxilyzer in your jurisdiction. If there is not one please contact us or the KSP Lab.

<u>Steps 1 - 4</u> explain what the operator will do prior to pressing the start test button. The operator should review these steps to insure all steps are followed.

<u>Step 5</u> – Be sure the twenty (20) minute observation period is complete before pressing the start test button.

<u>Step 6</u> – Insert the card; be sure the card goes into the instrument easily fitting between the two metal guides.

NTF: <u>Step 7</u> – Data Entry

Subject's Last Name (15 Characters)

Cover what to do if you have a Jr., Sr., II, or III and such.

Cover what to do if the last name exceeds the 15 Character limit. Show students where to print the name at the bottom of the evidence card.

It may be best to turn to the example in the Breath Analysis Instrument Operators Manual.

Operators and Arresting Officers name, if they are the same point out that it is necessary for them to enter it in both places for accurate record keeping.

Arresting Officers Agency, be sure to point out the necessity not to get too generic, i.e., "RPD". Give some correct examples.

Drivers License Number – Express the importance of including the state of issue before putting the number in as it is shown on the OL, i.e., KY, IL, OH and such.

<u>Step 8 – 10</u> Impress upon the student by following the Administration Sheet they were given that each of these steps would be followed.



LEC:

This sheet should be on the front of or at least posted next to the Intoxilyzer in your jurisdiction. If there is not one please contact us or the KSP Lab.

<u>Steps 1 - 4</u> explain what the operator will do prior to pressing the start test button. The operator should review these steps to insure all steps are followed.

<u>Step 5</u> – Be sure the twenty (20) minute observation period is complete before pressing the start test button.

<u>Step 6</u> – Depending on the state of issue the drivers license may be scanned. If it cannot be scanned or you don't have a drivers license just press enter and manually enter data requested. **LEC:** Step 7 has similar steps that the 5000EN has with the exception of the size of some fields and necessary data in others.

Subject's name is now 25 characters. If you scanned the OL this will be automatically filled in. Press enter.

Arresting officer's name - If you have your OL you can scan it at this time or press enter and manually input the data.

ORI – You have to type in the "KY". This reverts back to the days of the old 5000.

Citation and report number are self explanatory.

OL number – Just type the number as it is displayed on the drivers license.

OL State of Issue – Type in the 2 character designation for the correct state.

DOB – You have to now type in the 4 digit year.

Subject Sex – M or F

Subject Race and ethnic origin – Operator will use the arrow keys to move through the options. Press enter when you see the correct designation.

DUI related and Review data is the same as on the 5000EN.

Be sure you are using the correct Admin Sheet with the correct instrument, Green – 5000EN and Yellow – 8000.



- **QTC** How long does it take for the 5000EN to become operational from a cold start?
- 30 minutes
- **QTC** The 8000?
- AR 20 minutes
- **QTC** How can you tell if the 5000EN is in the standby mode by just looking at the front cover?
- **AR** The red LED is on, but the screen is dark
- **QTC** The 8000?
- **AR** Display will indicate standby mode.
- **QTC** What indication would the operator get when they run test 116 on the 5000EN?
- AR Memory Near Full
- QTC What is the testing sequence currently used throughout Kentucky?
- AR ACABA

QTC	What is the temperature of the simulator and why?
AR	34° C, because that is the temp of exhaled breath
QTC AR	What are the four purposes of the "Start Test" button? Start, invalidate a test, first procedure for an error/diagnostic fail, brings it out of standby mode.
QTC AR	What key do you use to leave a field blank? The spacebar
QTC	True/False - An incorrect operational procedure or condition is an example of an error?
AR	False, an incorrect operational procedure the instrument is doing what it was designed to do.
QTC	What information is entered into the 8000 when the operator scans the subject's OL into the instrument?
AR	Name (First, Last, Middle Initial)
	Operator license number
	State of issue of the OL
	Date of Birth
	Sex
LEC	The race and ethnic origin will default to the last test ran; need to check to insure that both are correct for your subject.



**LEC:** We have covered the instruments' capabilities, what each button, tube, and display does for the operator. Next we will be discussing the cards each instrument produces and the operator's responsibility for each.

# **TIME: 2 Hours**