CHEMICAL TEST TRAINING
Student Manual

Fall 2013 - Spring 2014

Office of Attorney General
Crime Laboratory Division
Toxicology Section
2641 East Main Avenue (58501)
P.O. Box 937
Bismarck, ND 58502-0937
Oct 2013

Successful Completion of Course

The primary purpose of this course is to train law enforcement officers to become Intoxilyzer® 8000 operators. Part of the training includes adequate preparation for the administrative hearing and the courtroom process.

Following are class requirements:

1. Attendance at **all classes** is required.

2. Each student must complete **thirty (30) tests on the Intoxilyzer® 8000**.

3. **A score of 75 percent on the quiz is required.** Failure to achieve this score will result in individual training with an instructor.

4. **A score of 75 percent correct on the final exam is required.** Failure to achieve this will require the student to return for additional classroom training and a score of 75 percent correct on a second exam.

5. **You will be required to take five (5) error-free tests on the Intoxilyzer® 8000.** One test will be a calibration check (ACA). The other four tests will be done on unknown solutions. Failure to achieve this will result in review of the *Approved Method to Conduct a Breath Test on the Intoxilyzer*® 8000 and repeating the tests, error-free.

If officers are in need of additional information or have questions, please contact the lead instructor. The Crime Laboratory is willing to accommodate additional training needs.

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Table of Contents

INTOXILYZER® 8000 GENERAL INFORMATION 1

Theory of Infrared Analysis 1
Instrument Design and Function 2
Parts, Controls, and Indicators 3
Preliminary Setup 6
Supplies at Each Location 6
Display Messages and Commands 7
Operational Modes 7
Audible Tones 7
Keyboard Selection 8
Changing the Time, Date, or Location Code 8
Computer Modem 9
Number of Test Records Printed 9
Changing the Ethanol Breath Standard 10
Intoxilyzer® 8000 Portability 10
Printers 12

INTOXILYZER® 8000 DIAGNOSTIC TEST SERIES 13

Criteria for Breath Samples 14
Types of Breath Samples 14
Operating Procedures 15
North Dakota Custom Mode Sequence 15

INTOXILYZER® 8000 TROUBLESHOOTING 21

Intoxilyzer® 8000 Diagnostic Checks 21
Corrective Action for any Exception 23
Test Record Reporting Exceptions 23
Reboot Intoxilyzer® 8000 and Printer 28
Consistency in Breath Samples 28
Detection of Residual Mouth Alcohol 28
When Not to Use the Intoxilyzer® 8000 29

INTOXILYZER® 8000 MODES 30

Mode Options 30
APPROVED METHOD 35

INTOXILYZER® 8000 QUALITY ASSURANCE 38

Ethanol Breath Standard 39
Exchanging Intoxilyzer® 8000 Units 42
Field Inspectors 43
Toxicology Section Staff 43

PHARMACOLOGY OF ALCOHOL 44

Alcohol 44
Common Alcohols 45
Alcoholic Beverages 46
Disposition & Fate of Alcohol in the Body 49
Absorption of Alcohol 49
Distribution of Alcohol in the Body 50

Elimination of Alcohol 51
Effects of Alcohol 52
Care of the Inebriated Detainee 55
Weather Exposure 55
Vomit Control Center 55
Blackouts 55

BLOOD, URINE, & POSTMORTEM KITS 56

Blood Specimens 56
Urine Specimens 61
Postmortem Specimens 64

THE ADMINISTRATIVE HEARING PROCESS 66

NORTH DAKOTA CENTURY CODE 70

PRACTICAL TESTS 71

Instructions 71
Types of Lab Tests 71
Definitions 72
Introducing a Subject Sample Via Simulator 72

TESTS 74

INTOXILYZER® 8000 GENERAL INFORMATION

All of the Intoxilyzer® 8000 instruments were purchased from the manufacturer, CMI, Incorporated. These instruments are manufactured as mobile units. Every Intoxilyzer® 8000 is equipped with an internal printer and may accommodate an external printer.

Intoxilyzer 8000 Instrument and Printer

THEORY OF INFRARED ANALYSIS

The basis of infrared breath analysis is the absorption of infrared energy by alcohol molecules in the breath specimen. Infrared energy is not visible to the human eye. It can be described as “heat energy”; it is what is felt from a common, red, heat lamp.

Molecules absorb light at specific wavelengths depending on their physical size and structure. These wavelengths can serve as a “fingerprint” to identify a chemical, while the amount of infrared energy absorbed can serve to quantify the amount of chemical present. The ethyl alcohol (ethanol) molecule has a unique molecular structure. Ethanol absorbs different amounts of light at each of two known wavelengths (9µ and 3µ). Accordingly, the Intoxilyzer® 8000 breath analysis instrument uses an infrared energy absorption technique to determine the alcohol concentration of a breath sample.

During a breath test, the molecules absorb more infrared energy and the amount of infrared energy reaching the detector decreases. The instrument compares the

reference point and the breath test measurement. It calculates alcohol concentration in the breath sample and displays the result in weight by volume (g/210 L expired breath) in accordance with the Uniform Vehicle Code and the North Dakota Century Code (N.D.C.C.).

INSTRUMENT DESIGN AND FUNCTION

The instrument uses standard AC electrical power as the primary power source. This AC current is converted into regulated DC power by the instrument. The regulated DC voltage is used to power the electronic circuits in the instrument.

The alcohol concentration is quantitated by the “analytical bench” of the Intoxilyzer® 8000. A pulsed source emits infrared energy. A filtering system allows only selected infrared wavelengths to reach the photo detector. This energy then is converted to an electronic signal. The change in the intensity of this signal allows the instrument to evaluate and analyze alcohol concentration of the subject’s breath sample.

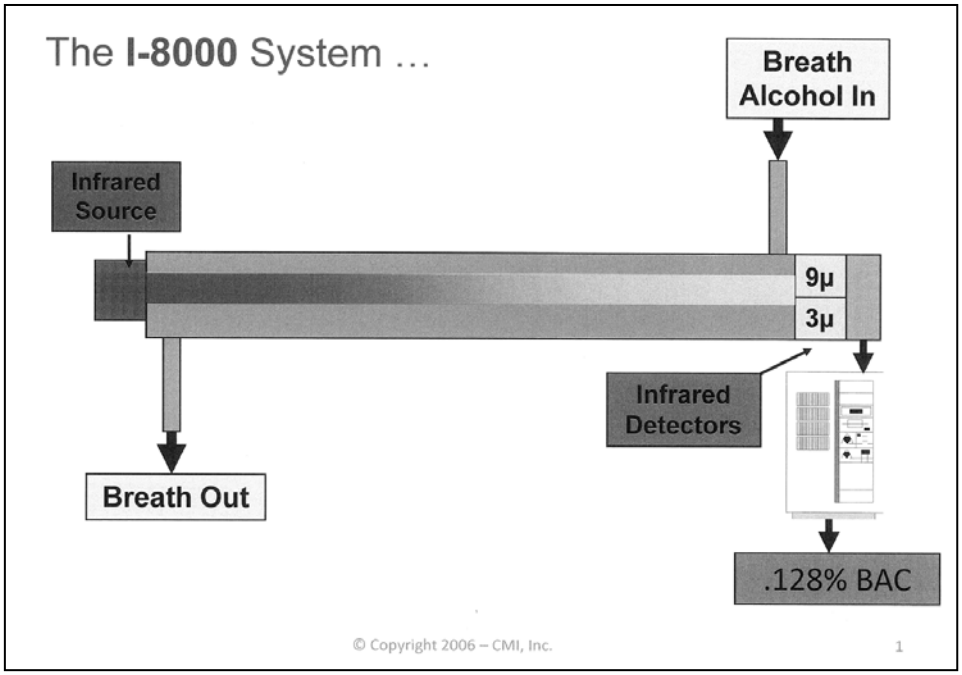


Diagram of the Intoxilyzer 8000 Analytical Bench (reprinted with permission)

The internal programming directs the Intoxilyzer® 8000 through distinct phases during the test. The instrument first checks its systems and runs the analysis with the subject’s breath specimen and a gas standard at a known concentration. The steps include several air blanks where the instrument performs a system blank analysis. A scrolling electronic display provides instructions for the operator as the test proceeds.

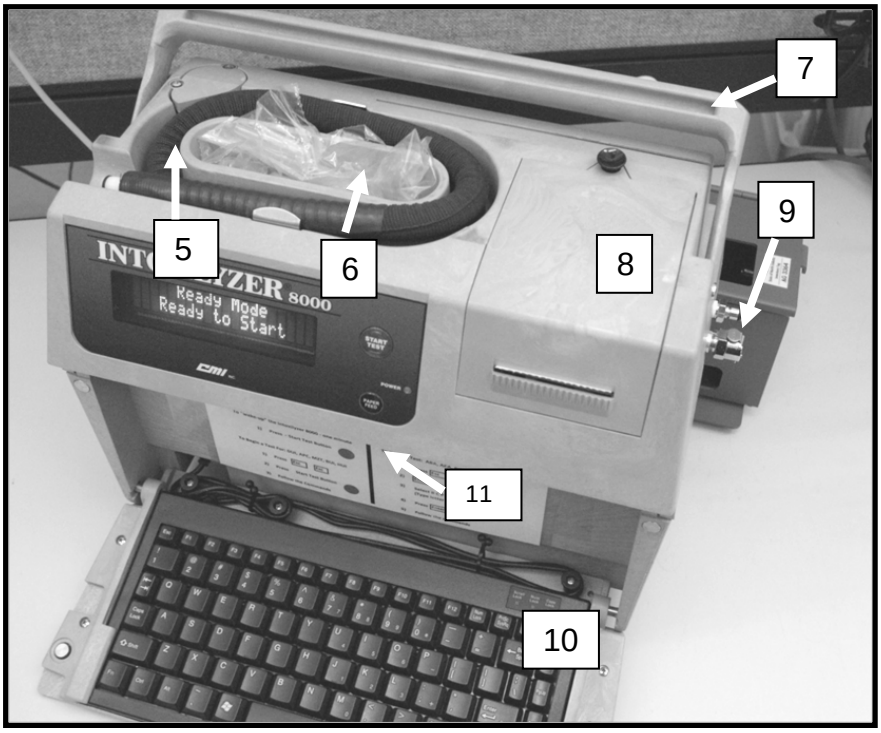
The Intoxilyzer® 8000 continuously monitors its systems throughout the test. The instrument will invalidate the test if (at any point) an environmental testing condition, an improper instrument operating condition, or an operational mistake is detected. The operator may invalidate or stop the test at any point with the “Start Test” switch.

PARTS, CONTROLS, AND INDICATORS

Operators should be familiar with the parts, controls, and indicators when testifying in court or during administrative hearings and while reporting problems. (See figures, below.)

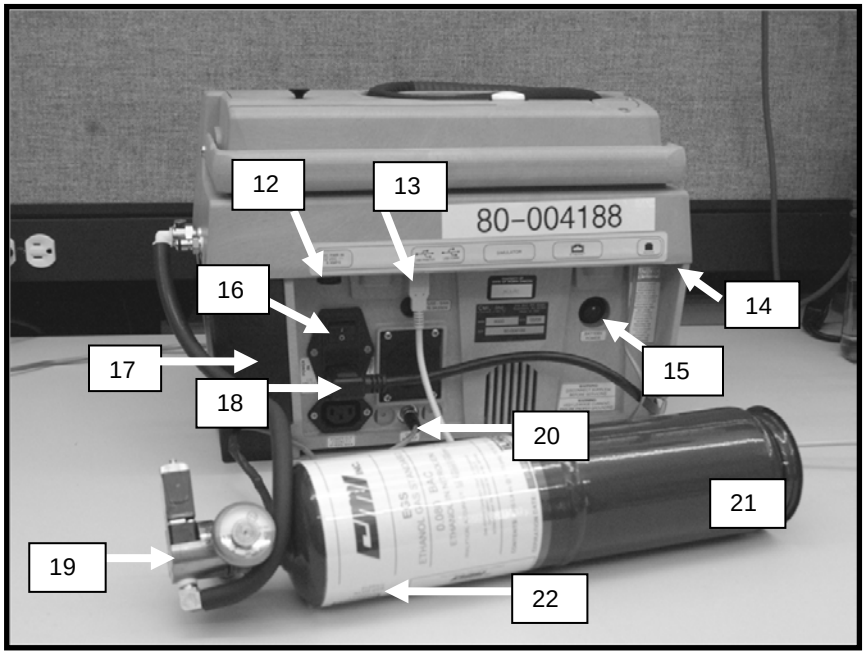
Intoxilyzer 8000 Front View

1. **DISPLAY**: A two line digital display indicating the status of the Intoxilyzer® 8000 and giving directions to the operator.
2. **PAPER FEED**: Button that advances the paper in the internal printer.
3. **POWER INDICATOR**: A light-emitting diode which indicates if the instrument is plugged into the AC power source or the DC power source.
4. **START TEST SWITCH**: A green, push button switch used to initiate a test sequence. Press the button to turn the instrument on. Press and hold the button to abort a test.



Intoxilyzer 8000 Top View

5. **BREATH HOSE**: The heated breath hose carries the breath sample from the mouthpiece to the sample chamber. When at a remote site, keeping it coiled in the top of the instrument will help keep it warm.
6. **MOUTHPIECES**: Mouthpieces are kept warm in the mouthpiece storage area.
7. **CARRYING HANDLE**: Handle for carrying this mobile instrument.
8. **INTERNAL PRINTER COMPARTMENT**: Compartment to replace thermal printer paper. The knob should be pulled out about one-quarter of an inch prior to lifting the cover to the printer.
9. **ETHANOL STANDARD CONNECTION**: A quick disconnect fitting for the tubing from the gas regulator.
10. **KEYBOARD**: The keyboard (PS/2) is fitted with magnets to hold it to the case of the instrument and protects the camera for the 2D bar code reader. It contains a long cord which allows adjusting position.
11. **2D CARD READER**: Camera equipped to read 2D card bar codes.



Intoxilyzer 8000 Back View

12. **12 VOLT POWER SOURCE**: Connection for mobile use.
13. **PRINTER CONNECTOR (USB)**: Printer connector for external printer.
14. **MODEM CONNECTOR (RJ-11)**: Telephone line connector for the modem.
15. **BATTERY POWER SWITCH** (Rocker Switch): For battery power use.
16. **MAIN POWER SWITCH** (Rocker Switch): Turns on AC or DC power.
17. **BATTERY PACK**: Allows about two (2) hours of backup power
18. **POWER CORD**: AC power cord.
19. **GAS REGULATOR**: Gas regulator for the Ethanol Breath Standard (usually in locked compartment).
20. **REGULATOR POWER CORD**: Power cord for the solenoid of the regulator.
21. **ETHANOL BREATH STANDARD**: Gas cylinder.
22. **GAS CYLINDER INFORMATION**: Lot number, cylinder number and bar code.

PRELIMINARY SETUP

Locate the instrument to assure adequate ventilation. The instrument's operational environment should be relatively dust-free.

The instrument's power and battery switch should be left on between tests.

WARNING: In keeping with standard safety practices, the instrument's metal base plate is grounded through the third wire of the power cable. To protect the instrument from electrical surges or lightning strikes, please use the surge protectors provided with each Intoxilyzer® 8000.

SUPPLIES AT EACH LOCATION

Crime Laboratory staff will provide the following supplies at the time of initial installation:

1. Intoxilyzer® 8000;
2. Surge Protector;
3. Mouthpieces;
4. Intoxilyzer® Record Form 120-G (form available for printing on the Office of Attorney General's web site: http://www.ag.nd.gov/CrimeLab/CrimeLab.htm);
5. Certified Ethanol Breath Standard.

Intoxilyzer® 8000 Field Inspectors include scientists from the Crime Laboratory, sergeants of the North Dakota Highway Patrol, and lead operators from police departments and sheriff's offices. Those individuals are trained to install the Intoxilyzer® 8000 and make minor repairs. They are designated on the List of Certified Chemical Test Operators that is filed annually with the County Recorder (or the person in charge of records) in each county.

Operators should contact the following people in case of problems with the Intoxilyzer® 8000:

- **Field Inspector**: Field Inspector at your location;
- **Crime Laboratory**: Crime Laboratory staff responsible for breath testing;
- **NDHP**: NDHP Sergeants for your region.

DISPLAY MESSAGES AND COMMANDS

The Intoxilyzer® 8000 instrument visually communicates to the operator by displaying the messages and commands. Each time the instrument is initially turned on with the power switch and battery switch, the unit must warm-up for 20 minutes. The instrument should be left on at all times. This will prevent the 20-minute delay prior to running a subject test.

OPERATIONAL MODES

1. **Not Ready Mode:** The instrument is not ready for a test. The instrument enters this mode when the power switch and the battery switch are first turned on. The Intoxilyzer® 8000 will take approximately 20 minutes to warm-up. The last 5 minutes of this warm up period will be displayed as a countdown.

2. **Ready Mode:** The Intoxilyzer® 8000 is ready to run a subject test.

3. **Standby Mode**: If the instrument is not used for a period of thirty (30) minutes, it will suspend operation. The instrument turns off the pulsed infrared source but maintains the temperature zones. To return to the Ready Mode, depress the “Start Test” button. It will take about one minute to become ready for testing.

4. **Disabled Mode:** The instrument has been disabled and cannot be used to conduct breath tests. Crime Laboratory staff may disable the instrument if maintenance is necessary.

AUDIBLE TONES

The Intoxilyzer® 8000 sounds three different tones to aid the operator in performing a breath test such as follows:

1. **Short Beep:** This sounds after the completion of each mode (operation). The short beep will also sound every 5 seconds during the 3 minute period that the subject has to deliver an adequate breath sample.

2. **Continuous Tone:** This sounds while a subject blows sufficient pressure into the mouthpiece. It will stop if the subject stops blowing.

3. **High-Low Tone:** This sounds intermittently for 5 seconds in the event of a malfunction, incorrect operational procedure, or unfulfilled test requirement. It will also sound when the 2D barcode of the chemical test operator card or the driver’s license is read by the instrument’s camera.

KEYBOARD SELECTION

A mode is a series of steps that are directed by the Intoxilyzer® 8000 computer programming. All Intoxilyzer® 8000 operators may operate the North Dakota Custom Mode Sequence (CMS), the print test, the calibration check (ACA), and the single-breath test (ABA). The Intoxilyzer® 8000 uses keyboard entries to select the mode of choice. (See tables, below.)

TEST MODES	
Mode:	**Contains These Steps:**
CMS	D, A, B, A, C, A, B, A
P	Print Test Record
ACA	A, C, A, C, A, C, A
ABA	A, B, A

STEP LEGEND		
Legend:		**Step:**
A	**A**ir Blank:	The instrument's pump purges the sample chamber and internal and external breath tubes.
B	**B**reath Test:	The instrument analyzes a breath sample for alcohol concentration.
C	**C**alibration Check or Simulator Test:	The instrument analyzes alcohol vapor from an attached ethanol breath standard or attached wet bath simulator.
D	**D**iagnostic Test:	The instrument will check a series of components to ensure it is "Ready to Start."

CHANGING THE TIME, DATE, OR LOCATION CODE

Field Inspectors will have access to changing the time, date, and location of the Intoxilyzer® 8000, along with other modes. Crime Laboratory staff can also remotely change these items by use of a computer modem when the instrument is plugged into an analog telephone line.

The time and/or date will change automatically at the end of the year, the beginning and end of daylight savings time, and with a leap year. **The time zones must be set by the Field Inspector or a Crime Laboratory staff member.**

COMPUTER MODEM

When the instrument is connected to an analog telephone line or modem line, the Crime Laboratory staff is able to download data and clear the memory of the instrument as needed. It also enables the staff to upload officer data as officers become certified to operate the instrument.

NUMBER OF TEST RECORDS PRINTED

Custom Mode Sequence (CMS):

The CMS mode allows you to select the number of copies (up to 8) of the test record to be printed. Selecting four (4) copies to be printed will allow you to:

1. Retain one copy for your file;

2. Give one copy to the subject;

3. Give one copy to the prosecutor;

4. Certify and send one copy with the Report and Notice to the Department of Transportation (refer to DOT regulations).

After returning to the Ready Mode, another copy of that subject test may be printed by pressing the “F1” key. This function will only remain active until the next subject test is started and the instrument must be in the Ready Mode.

One Breath Test Mode (ABA):

The ABA allows you to select how many copies (up to 8) of the test record to be printed. Selecting three (3) copies of the subject test record to be printed will allow you to:

1. Retain one copy for your file;

2. Give one copy to the subject;

3. Give one copy to the prosecutor.

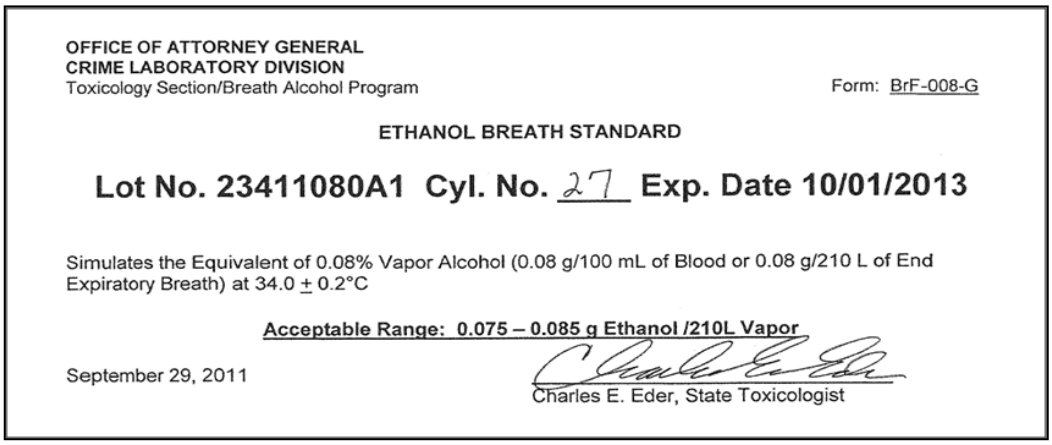
The “F1” key will not reprint the ABA or last test record.

Calibration Check (ACA):

The ACA test automatically prints one copy of the test record. This copy should be submitted to the Crime Laboratory with Form 105-G when completed. You should make copies of both the Form 105-G and the ACA test record for your agency. The "F1" key will not reprint the last ACA test record. Note: Calibration checks are printed on test records as a "Dry Cal Check." (See figures, following.)

CHANGING THE ETHANOL BREATH STANDARD

The lot number, cylinder number, and the expiration date of the Ethanol Breath Standard (EBS) should be entered each time the cylinder is changed. This information can be found on the cylinder itself as well as the Ethanol Breath Standard Form BrF-008 attached to the cylinder (see figure, below). This procedure is explained under Quality Assurance in this manual. All certified Intoxilyzer® 8000 operators are qualified to change the EBS cylinder. The cylinders are available from the Crime Laboratory. By periodically checking the pressure of the cylinder attached to the Intoxilyzer® 8000, operators can notify the Crime Laboratory of the need for a new cylinder. The cylinders cannot be mailed as they are hazardous materials. Plans must be made for someone to pick up the cylinders.



OFFICE OF ATTORNEY GENERAL
CRIME LABORATORY DIVISION
Toxicology Section/Breath Alcohol Program

Form: BrF-008-G

ETHANOL BREATH STANDARD

Lot No. 23411080A1 Cyl. No. 27 Exp. Date 10/01/2013

Simulates the Equivalent of 0.08% Vapor Alcohol (0.08 g/100 mL of Blood or 0.08 g/210 L of End Expiratory Breath) at 34.0 ± 0.2°C

Acceptable Range: 0.075 – 0.085 g Ethanol /210L Vapor

September 29, 2011

Charles E. Eder, State Toxicologist

Ethanol Breath Standard Form BrF-008G

INTOXILYZER® 8000 PORTABILITY

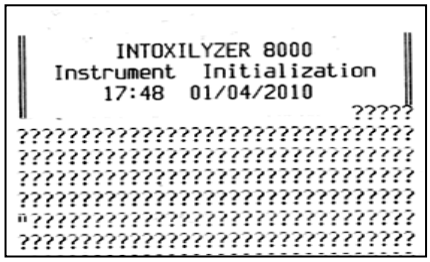
The Intoxilyzer® 8000 is engineered to be used as a mobile instrument. The instrument may be moved from law enforcement agencies and correctional facilities to be used at a remote location for subject testing. The Intoxilyzer® 8000s must be installed by a Field Inspector prior to it being used for evidentiary testing. This will ensure that the calibration is maintained.

Operators may also arrange to borrow additional unit(s) from the Crime Laboratory so that operators on routine patrol have access to an instrument. The unit must be re-installed if it is going to be transported from a local agency.

The Intoxilyzer® 8000s are equipped with a battery pack to allow the instrument to be used in a correctional facility or at a roadside sobriety check point. When fully charged, the battery provides power to the unit for approximately two hours. It can also be plugged into a vehicle cigarette lighter for power from a 12 volt battery. The battery pack attached to the Intoxilyzer® 8000 requires both power switches be turned on for normal use while plugged into the 110 volt outlet. The following messages on the display refer to the status of the battery charge. (See table, below.)

BATTERY CHARGE STATUS	
Display Message:	**Meaning:**
Fast Charge 87% ▮▮▮▮▮▮▮	The instrument was just plugged in and the battery is building a charge.
Discharging 67% ▮▮▮▮▮▮▮	The Intoxilyzer® 8000 is powered solely by the battery. The number indicates what percentage of the battery life remains.
Charge Suspend: 100% ▮▮▮▮▮▮▮	Unit is fully charged.

If the battery is allowed to discharge entirely, the internal printer will send out a long printout of question marks. Discard the printout. To charge the battery, plug the Intoxilyzer® 8000 into a 110 volt source and turn on the “power” and “battery” switches. The instrument will then charge the battery as it warms up. (See figure, below)



Initialization; Power Button Off; Battery Run Down

PRINTERS

The Intoxilyzer® 8000 is equipped with an internal printer. The printer uses thermal printer paper to record the test records. If an external printer is connected via a USB cable to the rear of the Intoxilyzer® 8000, the instrument will send the data to the external printer instead of the internal printer.

Note: If the USB cable becomes loose, the Intoxilyzer® 8000 will send the data to the internal printer. The operator should reconnect the cable and reboot the instrument by turning **both** power and battery buttons “off” and then “on.” The Intoxilyzer® 8000 will proceed with a 5-minute countdown until “Ready to Start” appears on the screen.

Replacing the Internal Printer Paper:

1. Lift and remove the paper door by lifting the black knob;

2. Pull the green lever forward until it locks;

3. Lift and remove the used roll of paper from the roll holder;

4. Place a new roll of paper on the holder with the paper spooling from the bottom. Slip the leading edge of the paper underneath the rear of the black rubber roller until the edge slides out the front;

5. Push the green lever up and back until it locks;

6. Feed the paper through the slot in the printer paper door;

7. Replace the printer paper door and press the black knob until it locks.

Out of Paper

The external printer has a buffer to retain data from the last test. If the printer starts up and no paper appears, the printer will indicate failure with a flashing light. The operator should add paper and then the requested number of copies will be printed. Keep in mind the “F1” key may be depressed to print additional copies of the test only in the CMS mode after it has returned to the “Ready Mode.”

Test Record Jammed

Occasionally a test record may become jammed in the internal printer of the Intoxilyzer® 8000. Open the cover of the printer by pulling out the black knob. Lift the top of the printer cover up. Gently pull the green lever of the printer forward. Adjust the paper roll so the paper is evenly spaced on the roller from side to side. Release the green lever to allow the paper cutter to hold the paper in place.

INTOXILYZER® 8000 DIAGNOSTIC TEST SERIES

Following is a list of checks done by the Intoxilyzer® 8000 as a diagnostic test series. An explanation of each step is provided below. “Diagnostic” will appear on the top line of the display.

DIAGNOSTIC TEST SERIES	
Display Message:	**Meaning:**
Not Ready Mode MM/DD/YYYY HH:MM	The instrument was just powered on. It will take 20-30 minutes to warm-up.
Ready in 04:59 MM/DD/YYYY HH:MM	The instrument will count down the final five minutes of the warm-up period.
Room Air	The instrument takes a room air sampling.
Voltage/Current	Verifies voltage and current value.
RAM Test	Verifies Random Access Memory availability.
EEPROM Test	Verifies validity of the checksum and EEPROM data (checks computer programming).
RTClock Test	Validates current time and date (real time clock test).
DSP Test	Verifies that the digital signal processor is functioning correctly (digital signal process test).
Analytical Test	Verifies the stability and operation of analytical components.
Int Prnt Test	Checks internal printer.
Modem Test	Verifies internal modem operation.
Temp Reg Test	Verifies prescribed temperature controls for the sample chamber and breath tube (temperature regulation test).

Following each test, “Pass,” “N/A,” or “Fail” will appear at the end of each line. The Intoxilyzer® 8000 will then enter the “Ready Mode.” Four messages will alternate on the display: “ND Model,” “Ready to Start,” “MM/DD/YYYY,” and the battery status. The Intoxilyzer® 8000 is ready to begin a test.

CRITERIA FOR BREATH SAMPLES

The Intoxilyzer® 8000 is designed and programmed to obtain a breath specimen that is an "end expiratory breath." It evaluates the breath according to four criteria.

Four Criteria for an Adequate Breath Sample:

1. **Flow**: The subject must blow steadily with a flow rate of 0.15 L per second. A continuous tone will sound.

2. **Minimum Volume**: 1.1 L

3. **Level Slope**: The alcohol concentration should not go up or down.

4. **Time**: The subject must continue blowing one second after the volume and slope criteria have been met.

When all four criteria are met in a single breath, it is referred to as an "Adequate Breath Sample."

The subject has a three-minute period to deliver each of two breath samples in the North Dakota Custom Mode Sequence (CMS). The subject may stop and restart blowing into the Intoxilyzer® 8000 during this time; however, the Intoxilyzer® 8000 will judge the breath sample adequate only if all four criteria are met. If any of the four criteria is not met, the instrument will indicate the sample to be **deficient** or an invalid sample. It may also indicate **interferent** present in the sample. (See "Troubleshooting" for more information.)

TYPES OF BREATH SAMPLES

1. **Adequate Sample:** All four criteria are met: flow, volume, slope, and time.

2. **Deficient Sample:** At least one of the four criteria is not met. Usually the subject fails to blow hard enough or long enough.

3. **Invalid Sample:** Some residual mouth alcohol was present. The slope detector in the computer sensed a rise then fall of the breath alcohol concentration.

4. **Interferent Detected:** A chemical other than ethyl alcohol was detected by the Intoxilyzer® 8000.

OPERATING PROCEDURES

The mucous lining of the mouth cavity and nasal passages store alcohol for 5-15 minutes after a person consumes an alcoholic beverage. Normal absorption eliminates residual mouth alcohol within 20 minutes. Therefore, ascertain that the subject has not had anything to eat, drink, or smoke for 20 minutes before performing an evidentiary test. If the subject regurgitates or places anything to eat, drink, or smoke in his/her mouth, note the time and delay starting a breath test for at least 20 minutes.

NORTH DAKOTA CUSTOM MODE SEQUENCE

The North Dakota Custom Mode Sequence (CMS) was developed to provide a test sequence which would meet the requirements of the *Approved Method to Conduct Breath Tests With the Intoxilyzer® 8000* and recommendations of the National Safety Council for evidentiary breath testing.

The *Approved Method(s)* containing the Custom Mode Sequence must be used for evidentiary breath analysis in cases dealing with Driving Under the Influence (DUI), Actual Physical Control (APC), Snowmobiling Under the Influence (SUI), Off Highway Vehicle (OHV), Minor Zero Tolerance (MZT), Hunting Under the Influence (HUI), and Boating Under the Influence (BUI).

- **Steps of the Custom Mode Sequence:**

In accordance with the *Approved Method*, a valid breath test in the Custom Mode Sequence (CMS) must contain all of the following steps:

1. D = Diagnostics;
2. A = Air Blank;
3. B = Subject Breath;
4. A = Air Blank;
5. C = Calibration Standard or Ethanol Breath Standard;
6. A = Air Blank;
7. B = Subject Breath;
8. A = Air Blank.

The following messages, instructions, and/or commands will appear in the *North Dakota Custom Mode Sequence* program when the instrument is working properly, no errors occur during the test, and the instrument/operator does not terminate the test.

CUSTOM MODE SEQUENCE (CMS) — DUI, APC, MZT, BUI, SUI, OHV, AND HUI	
Display Message	**Meaning/Required Action**
Standby Mode	Press “Start Test” button (displays a one minute countdown).
Ready Mode *(Second line alternates between:)* ND Model Ready to Start Date Time Battery Status	Press “ESC,” “ESC,” and then the “Start Test” (green) button.
Please Scan ID or Press Enter Oper No? Oper Last Name? Oper First Name?	Scan chemical test operator card and verify each data item by pressing “Enter” or press “Enter” and manually answer the questions.
20 Minute Wait? Y/N N	Answer if the 20-minute wait was ascertained.
# of Print Copies? 1	Answer the number of copies needed. (Use “1” for class testing and “5” for DUI subjects.)
Please Scan DL or Press Enter Subj Last Name? Subj First Name? Subj Middle Name? Subj Date of Birth? Subj Sex M/F? Subj Weight?	Scan driver’s license and verify each data item by pressing “Enter” or press “Enter” and manually answer the questions. (Type date in this format: MM/DD/YYYY.)
Test Reason DUI ↑↓↵ Driving Under Infl Test Reason HUI ↑↓↵ Hunting Undr Infl Test Reason MIC ↑↓↵ Minor in Consumption Test Reason OHV ↑↓↵ OHV Test Test Reason OTH ↑↓↵ Other	Indicate the reason for the breath test by using “Page Up” or “Page Down” or arrow up or down (↑↓) keys. Press “Enter” to indicate reason.

Test Reason SUI ↑↓↵ Snowmobiling Under Infl Test Reason WRK ↑↓↵ Work Release Test Reason BUI ↑↓↵ Boating Undr Infl	
Citation #? —	Enter the citation number if it is available or “NA” if it is not.
Drivers License #? —	Enter subject’s driver’s license number.
DL State —	Enter the two letter state code.
County —	Enter the two digit number for county of arrest. (See “*County Codes*.”)
Review Data (Y/N)? N	Selecting “Y” allows the operator to correct any typos by stepping through the above data and correcting any incorrect information; when selecting “N,” the instrument proceeds with diagnostic tests.
A set of diagnostic tests is run. If all criteria are met for the above checks, the instrument displays the following:	
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
Reference ▮▮▮▮▮▮▮	The instrument determines the baseline.
Please Blow Until Tone Stops	**Attach a clean mouthpiece.** Instruct the subject to blow into the mouthpiece until the tone stops. The operator should then coach the subject to continue to blow for a certain count (suggested 3-4). The subject has three minutes to provide an adequate breath sample containing alcohol. The instrument will display the alcohol concentration value (AC) until the subject has delivered a sufficient breath sample. The instrument will display the zero to the left of the decimal point indicating that the subject has delivered an

Subject Test Rslt:0.###	adequate breath sample. If the subject stops blowing before providing a sufficient sample, the instrument will display “Please Blow Until Tone Stops” and will beep every 5 seconds until the subject delivers another breath sample. If this occurs, instruct the subject to blow into the mouthpiece until the tone stops (no need to change the mouthpiece). In the event that the subject fails to provide an adequate breath sample within three minutes, “Deficient Sample” appears on the display accompanied by a high-low tone sounding intermittently every five seconds. On the test record, the instrument indicates the highest obtainable alcohol concentration (AC) value by printing “*Subject Test 0.###*.” The asterisk (*) is a cross-reference to the message printed at the bottom on the test record, “*Deficient Sample - Value Printed Was Highest Obtained.”
Cln Mth Pc (Y/N)? —	Answer if a clean mouthpiece was used and disposed of. The “Y” will stay on the screen for about a minute.
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
Reference ▮▮▮▮▮▮▮	The instrument determines the baseline.
Std. Gas Rslt:0.0##	The instrument will sample and analyze the gas standard automatically with the aid of the regulator. The result will be displayed. The current Ethanol Breath Standard is 0.080 alcohol concentration (AC). The acceptable range is 0.075 – 0.085 alcohol concentration (AC).
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
Reference ▮▮▮▮▮▮▮	The instrument determines the baseline.
Please Blow Until	**Attach a clean mouthpiece.** Instruct the

Tone Stops Subject Test Rslt0.###	subject to blow into the mouthpiece until the tone stops. The operator should then coach the subject to continue to blow for a certain count (suggested 3-4). The subject has three minutes to provide an adequate breath sample containing alcohol. **Remove and discard the mouthpiece.**
Cln Mth Pc (Y/N)? –	Answer if a clean mouthpiece was used and disposed of. This “Y” will not appear on the screen long.
Room Air Rslt:0.000	The instrument is purging the sample chamber and internal and external breath tube.
Difference OK	The instrument will calculate the difference between the first and second subject breath samples if they are both found to be adequate and “Difference OK” will appear on the display.
Difference Too Great	If the difference between the two adequate breath samples is greater than 0.020 alcohol concentration (AC), the display will show “Difference Too Great.”
Ready Mode	The instrument will return to the “Ready Mode” and print the test record automatically.

If the Intoxilyzer® 8000 is not used for a set period of time, the unit will return to the “Standby Mode.”

On the next page is an example of a valid test record run in the North Dakota Custom Mode Sequence.

Location Code

Serial Number

Standard

Reported AC and Time

Difference

RFI Detect

Subject Info

Standard Setup

Chemical Test Operator (CTO) Number

Checklist Questions

Operator Remarks

Intoxilyzer Test Record and Checklist
NDOAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/26/2012 14:11

Test	AC	Time
01 Diagnostic	OK	14:12
02 Room Air	0.000	14:12
03 Subject Test 1	0.116	14:13
04 Room Air	0.000	14:15
05 Std. Gas	0.080	14:16
06 Room Air	0.000	14:17
07 Subject Test 2	0.114	14:18
08 Room Air	0.000	14:19
09 Reported AC	0.114	14:18

Difference OK
No RFI Detected

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

20 minute waiting period ascertained? Y
Clean Mouthpiece used and disposed? Y
Clean Mouthpiece used and disposed? Y

I followed the Approved Method and the instructions displayed by the Intoxilyzer in conducting this test.

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:

Form 106-I8000

INTOXILYZER® 8000 TROUBLESHOOTING

INTOXILYZER® 8000 DIAGNOSTIC CHECKS

When one turns on the Intoxilyzer® 8000 breath analysis instrument, “Standby Mode” appears on the display. Upon exiting the “Standby Mode,” the instrument performs a set of diagnostic checks on its components and operational standards.

If the unit locates an exception while performing the diagnostic checks, the display gives an exception and a high-low tone sounds. For example, if radio frequency interference is detected, the high-low tone will sound, the test will be halted, and “RFI Detect” is displayed and printed. A test cannot be started until the instrument completes the diagnostic checks without finding an exception.

EXCEPTIONS:

The table below lists the exceptions that may appear on the display. The exceptions are accompanied by a high-low tone.

EXCEPTIONS	
Exception:	**Suggested Action:**
Intox 8000 Test Record is Not Legible	Reprint a copy of the test record by pressing “F1.” This may only be done until the next subject test is started.
Invalid Sample	Residual mouth alcohol was detected in the subject’s breath sample. The display will read “Invalid Sample, accompanied by a high-low tone. The instrument aborts the mode sequence and prints “Invalid Sample X.XXX” followed by “*Invalid Test – Mouth Alcohol.” Since normal body processes absorb residual mouth alcohol in 20 minutes, observe the subject for at least 20 minutes before beginning another analysis. During the observation time, the subject may not smoke, eat, or drink. Furthermore, if the subject regurgitates, have the subject rinse out his/her mouth, note the time, and delay beginning a breath analysis for 20 minutes.
RFI Detect	High level radio frequency interference is present and may give a false room air, breath, or standard analysis. The instrument halts the test, “RFI Detect” appears on the

	display, “Invalid Test Inhibited – RFI” prints on the test record, and the instrument prepares itself to start another test. If “RFI Detect” occurs often, call Crime Laboratory staff to troubleshoot the problem.
Deficient Sample	The subject did not supply an adequate breath sample within three minutes. The instrument displays “*Subject Test 0.###*” and completes the mode sequence. The instrument indicates the highest obtained alcohol concentration (AC) value by printing asterisks (*) before and after “*Subject Test 0.###*” on the test record. The asterisks (*) cross-reference the message printed below the test record, “*Deficient Sample - Value Printed Was Highest Obtained.”
Interferent Detect	Interferent constitutes an invalid test. The subject’s breath sample contains a substance, such as acetone or an alcohol other than ethanol, that absorbs some of the same infrared wavelengths that ethanol absorbs. The instrument will display an apparent alcohol concentration, followed by “Interferent Detect.” It will also sound a high-low tone and abort the test. The instrument will print “*Subject Test INT*” on the test record. The asterisks (*) cross-reference the message printed below on the test record, “*Invalid Test Interferent Detected.” The operator should then seek medical assistance for the subject according to his/her agency policy and choose a blood or urine sample for evidence.
Ambient Fail	The room air is contaminated with chemicals that would interfere with the alcohol analysis (i.e. alcohol, smoke, cleaning supplies, or paint fumes). The display will read “Ambient Fail” and a high-low tone will sound. The instrument will run one more room air blank and abort the test. The test record will include data collected until the time of the ambient fail. That line will read “Room Air AMB*” followed by “Invalid Test Check Ambient Conditions.” The operator may clear the environment and repeat the breath test without delay or choose a different test as evidence.
Purge Fail	This exception occurs when the instrument is unable to clear the sample chamber after an “Ambient Fail” has

	occurred. The instrument will abort the test and print out "Room Air PUR*" followed by "*Purge Fail" on the test record. Starting and aborting a test may allow the instrument to clear the path with the extra room air samples. In the meantime, a blood or urine test may be required.
No Test Record is Printed	According to the *Approved Method*, this is considered an invalid test. You may request a new test from the subject.
Calibration Check Out of Tolerance	The analysis of the Ethanol Breath Standard is not within the acceptable range. "Std.Gas 0.###*" followed by "*Cal Check Out of Tolerance" will be printed on the test record. The test will be aborted and a high-low tone will be sounded. Check to see if the standard gas is plugged into the valve and if the regulator wires are plugged into the back of the instrument. Repeat the test or get an alternative sample.
Tank Pressure Below Minimum	The gas cylinder pressure for the standard is below the minimum necessary to conduct a test. Call Crime Laboratory staff.

CORRECTIVE ACTION FOR ANY EXCEPTION

If after an exception the Intoxilyzer® 8000 does not perform an automatic reset, the operator may "Reboot" the instrument and printer. The instrument will perform a set of diagnostic tests. It completes a five minute countdown before "Ready Mode" appears on the display and the instrument is operational. If an exception message re-appears, the operator should shut down the instrument and obtain a blood or urine sample. The lead operator or Field Inspector for the instrument should be informed of the problem. (See the "Troubleshooting" section.)

TEST RECORD REPORTING EXCEPTIONS

All printed test records must be preserved and submitted as evidence. The lower half of the test records, which reports exception messages, should be completed and signed, prior to submitting with the valid tests. **Do not destroy these records as they are considered evidence.** On the following pages are examples of test records showing locations where information and exception messages can be found.

Test Record Quick Guide

A chart is provided to each law enforcement agency to display near the Intoxilyzer® 8000. This chart gives every operator a quick guide how to read the Test Record Form 106-I8000 and whether a test is valid or not. Also stated is what action should be done if the breath test is not valid.

Check Standard Result

Check Difference or Other Exceptions

Check Information Typed/Scanned In

Check Label BrF-008-G

Three (3) Questions Missing

Intoxilyzer Test Record and Checklist
NDOAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer — Alcohol Analyzer
North Dakota Model 8000 — SN 80-004188
Location = TOXL — 8164.13.00 06/09
08/26/2012 — 14:33

Test	AC	Time
01 Diagnostic	OK	14:33
02 Room Air	0.000	14:34
03 Subject Test 1	0.021*	14:34
04 Room Air	0.000	14:37
05 Std. Gas	0.080	14:38
06 Room Air	0.000	14:39
07 Subject Test 2	0.117*	14:41
08 Room Air	0.000	14:41

*Difference Too Great

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female — Weight = 150
Test = DUI — Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 — Oper No. = 777777

I followed the Approved Method and the instructions displayed by the Intoxilyzer in conducting this test.

Deb Kashur

Operator Signature
DEB KASHUR

Remarks:

Form 106-I8000

Intoxilyzer Test Record and Checklist
NDOAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/26/2012 14:58

Test	AC	Time
01 Diagnostic	OK	14:58
02 Room Air	0.000	14:59
03 Subject Test 1	0.020	14:59
04 Room Air	0.000	15:02
05 Std. Gas	0.079	15:03
06 Room Air	0.000	15:04
07 *Subject Test	0.000*	15:07
08 Room Air	0.000	15:15
09 Reported AC	0.020	14:59

No RFI Detected

*Deficient Sample - Value Printed was
Highest Obtained

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DI8921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

20 minute waiting period ascertained? Y
Clean Mouthpiece used and disposed? Y
Clean Mouthpiece used and disposed? Y

I followed the Approved Method and the
instructions displayed by the Intoxilyzer
in conducting this test.

Deb Kashur

Operator Signature
DEB KASHUR

Remarks:
The subject refused to blow the 2nd time.

Form 106-I8000

Deficient Sample for Subject Test 2

RFI, Refusal & Interferent

Intoxilyzer Test Record and Checklist
NDDAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 13:47

Test	AC	Time
01 Diagnostic	OK	13:48
02 Room Air	0.000	13:49
03 Subject Test 1	0.115	13:49
04 Room Air	RFI*	13:50
05 Room Air	0.000	13:50

*Invalid Test
Inhibited - RFI

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

I followed the Approved Method and the instructions displayed by the Intoxilyzer in conducting this test.

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
RFI

Form 106-I8000

RFI Detected

Intoxilyzer Test Record and Checklist
NDDAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 13:51

Test	AC	Time
01 Room Air	0.000	13:52
02 *Subject Test	REF*	13:52
03 Room Air	0.000	13:52

*Subject Test Refused

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
ABA mode
Hot Key "R"
Form 106-I8000

Operator Pressed the Refusal Key

Intoxilyzer Test Record and Checklist
NDDAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 11:18

Test	AC	Time
01 Diagnostic	OK	11:19
02 Room Air	0.000	11:19
03 *Subject Test	INT*	11:19
04 Room Air	0.000	11:20

*Invalid Test
Interferent Detected

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

I followed the Approved Method and the instructions displayed by the Intoxilyzer in conducting this test.

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
Interferent

Form 106-I8000
Took subj. to get medical attn.

Interferent Present in Breath Sample

Test Records; Standard Below Tolerance, Chemical Detected, & Mouth Alcohol

Intoxilyzer Test Record and Checklist
NDDAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 13:46

Test	AC	Time
01 Diagnostic	OK	13:47
02 Room Air	0.000	13:47
03 Subject Test 1	0.022	13:48
04 Room Air	0.000	13:50
05 Std. Gas	0.000*	13:51
06 Room Air	0.000	13:52

*Cal Check Out of Tolerance

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

I followed the Approved Method and the instructions displayed by the Intoxilyzer in conducting this test.

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
The calibration inlet hose was disconnected.

Form 106-I8000

Intoxilyzer Test Record and Checklist
NDDAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 13:55

Test	AC	Time
01 Room Air	AMB*	13:56
02 Room Air	0.000	13:56

*Invalid Test
Check Ambient Conditions

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
ambient fail

Form 106-I8000

Intoxilyzer Test Record and Checklist
NDDAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 13:58

Test	AC	Time
01 Room Air	0.000	13:59
02 Invalid Sample	X.XXX	13:59
03 Room Air	PUR*	14:00

*Purge Fail
**Invalid Test - Mouth Alcohol

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
mouth alcohol with a purge fail

Form 106-I8000

Ethanol Breath Standard Below Tolerance (Tank Was Unplugged at Disconnect)

Chemical Detected in Room Air

Mouth Alcohol Detected

REBOOT INTOXILYZER® 8000 AND PRINTER

To reboot the Intoxilyzer® 8000:

1. Turn off both the main power and battery switches on the Intoxilyzer® 8000;
2. Unplug the power cord for the printer;
3. Unplug the printer cable from the back of the Intoxilyzer® 8000;
4. Wait about 20 seconds for capacitors to discharge;
5. Plug in the cords and cable;
6. Turn on the Intoxilyzer® 8000 main power switch and battery switch;

Note: It will only take a five minute countdown period for the Intoxilyzer® 8000 to go to the “Ready Mode” because the instrument was already warm.

CONSISTENCY IN BREATH SAMPLES

The operator should obtain consistent breath sampling. Coach the subject by instructing “Blow until told to stop.” If the subject is blowing with constant flow, the continuous tone will sound. The operator should watch the display until the ZERO to the left of the decimal point appears. At this point, the flow, volume, slope, and time requirements have been met. The tone of the Intoxilyzer® 8000 will then stop. The operator should coach the subject to continue to blow for a certain count (suggested: 3-4). This will ensure the instrument will lock in the alcohol concentration and the officer is sampling the breath consistently.

DETECTION OF RESIDUAL MOUTH ALCOHOL

It is important to determine if the breath sample testing positive is due to any alcohol in the mouth cavity that has not been absorbed into the bloodstream (residual mouth alcohol). This may be due to the last drink of alcohol or from a burp or belch.

While the Intoxilyzer® 8000 has a slope detector to detect residual mouth alcohol, the *Approved Method to Conduct Breath Tests With the Intoxilyzer® 8000* further checks for residual mouth alcohol by requiring the operator to do the following:

1. Ascertain a 20 minute wait or deprivation period;
2. Take two breath samples at least four minutes apart (automatically timed by the instrument);
3. Requires alcohol concentrations from the two adequate breath samples to agree

within 0.02 g/210 L (or 20 digits) of expired breath;

4. The Intoxilyzer® 8000 has a slope detector, which indicates invalid samples (Invalid Sample X.XXX).

If either the first or second subject sample indicates “Invalid Sample X.XXX,” the entire test shall be considered invalid due to residual mouth alcohol. The operator should stop the test and wait another 20-minute deprivation period prior to initiating the next test. If all four criteria are met, residual mouth alcohol did not interfere with the subject’s test.

Note: The operator may request that the subject rinse his/her mouth with water prior to the 20 minute wait.

WHEN NOT TO USE THE INTOXILYZER® 8000

1. When the power is fluctuating; a high or low voltage may stop the test or may damage the instrument.

2. When actively experiencing thunder/lightning storms; lightning may strike the building and cause damage to the instrument.

3. When the subject continues to belch or appears ill; the subject may spit stomach contents into the instrument.

4. When an exception code(s) appear after rebooting the instrument.

5. When a subject has lung problems, such as COPD or asthma.

INTOXILYZER® 8000 MODES

The Intoxilyzer® 8000 may be used for tests other than DUI. For example, the single breath test (ABA) can be used for MIC, Parole/Probation, Work Release, or a parent request.

MODE OPTIONS

All operators can access "Menu Level One." This is done by pressing, "Esc, Esc," followed by "Enter" only once. The menu will appear on the display as, "1 BCPSQ." Key the appropriate letter followed by the "Enter" key.

MODE OPTIONS	
Option:	**Performs:**
B	ABA Test
C	ACA Test
P	Print Test
S	Setup Standard
Q	Allows the operator to quit this level and return to "Ready to Start"

Note: There are no *Approved Methods* for these mode options.

MODE OPTION B (ABA Test) — ONE BREATH	
Display Message:	**Meaning/Required Action:**
Standby Mode (1 min. countdown)	Press the "Start Test" button.
Ready Mode (2nd line Alternating) ND Model Ready to Start Date Time Battery Status	Press "ESC," "ESC," followed by "Enter."
1| BCPSQ Breath Test	Select "B" and press "Enter."
Please Scan ID or Press Enter	Scan the chemical test operator card and verify each data item by pressing "Enter" or press "Enter" and manually answer the

Oper No? Oper Last Name? Oper First Name?	questions.
# of Print Copies?	Answer the number of copies needed. (Use “1” for class testing and “4” for MIC subjects.)
Please Scan DL or Press Enter Subj Last Name? Subj First Name? Subj Middle Name? Subj Date of Birth? Subj Sex M/F? Subj Weight?	Scan the driver’s license and verify each data item by pressing “Enter” or press “Enter” and manually answer the questions. (Type date in this format: MM/DD/YYYY.)
Test Reason DUI ↑↓↵ Driving Under Infl Test Reason HUI ↑↓↵ Hunting Undr Infl Test Reason MIC↑↓↵ Minor in Consumption	Press the “Page Down” or arrow down (↓) key until “MIC” appears. Press “Enter” to indicate an MIC test.
Citation #? —	Enter the citation number if it is available or press “Enter” if not available.
Drivers License #? —	Press “Enter” to verify the subject’s driver’s license number or enter the number.
DL State —	Enter the two letter state code.
County —	Enter the two digit number for county of arrest. (See *County Codes*.)
Review Data (Y/N)? N	Selecting “Y” allows the operator to correct any typos by stepping through the above data and correcting any incorrect information; if selecting “N,” the instrument continues with a room air sample.
No diagnostic tests will be performed during this test in “B” mode.	
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
Reference ▇▇▇▇▇▇	The instrument determines the baseline.

Please Blow Until Tone Stops	**Attach a clean mouthpiece**. Instruct the subject to blow into the mouthpiece until the tone stops. The operator should then coach the subject to continue to blow for a certain count (suggested 3-4). The subject has three minutes to provide an adequate breath sample containing alcohol. The instrument will display the alcohol concentration value until the subject has delivered a sufficient breath sample. The instrument will display the zero to the left of the decimal point indicating the subject has delivered an adequate breath sample. If the subject stops blowing before providing a sufficient sample, the instrument will display "Please Blow Until Tone Stops" and will beep every 5 seconds until the subject delivers another breath sample. If this occurs, instruct the subject to blow into the mouthpiece until the tone stops (no need to change the mouthpiece). In the event that the subject fails to provide an adequate breath sample within three minutes, "Deficient" appears on the display accompanied by a high-low tone sounding intermittently for five seconds. The instrument indicates the highest obtainable alcohol concentration (AC) value by printing "*SUBJECT TEST 0.###*" on the test record. The asterisk (*) is a cross-reference to the message printed at the bottom on the test record, "*Deficient Sample - Value Printed WAS Highest Obtained." **Remove and discard the mouthpiece.**
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
1| BCPSQ Breath Test	The instrument is ready to start a new test. Select one of the options or press "Q" to quit this mode and return to the "Ready Mode."

MODE OPTION C (ACA Test)	
Display Message:	**Meaning/Required Action:**
1| BCPSQ Configure Standard	The instrument is ready to start a test. Select “C” and press “Enter” to start.
Please Scan ID or Press Enter Oper No? Oper Last Name? Oper First Name?	Scan the chemical test operator card and verify each data item by pressing “Enter” or press “Enter” and manually answer the questions.
County –	Enter the two digit number for county of test. **(See “County Codes”)**
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
Std. Gas Rslt:0.###	The instrument will sample and analyze the gas standard with the aid of the regulator and pump. The result will be displayed. The current Ethanol Breath Standard is 0.080 alcohol concentration (AC). The acceptable range is 0.075 – 0.085 alcohol concentration (AC).
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.
Std. Gas Rslt:0.###	The instrument will sample and analyze the gas standard automatically with the aid of the regulator and pump. The result will be displayed. The current Ethanol Breath Standard is 0.080 alcohol concentration (AC). The acceptable range is 0.075 – 0.085 alcohol concentration (AC).
Room Air Rslt:0.000	The instrument is purging the sample chamber and breath tube.
Std. Gas Rslt:0.###	The instrument will sample and analyze the gas standard automatically with the aid of the regulator and pump. The result will be displayed. The current Ethanol Breath Standard is 0.080 alcohol concentration (AC). The acceptable range is 0.075 – 0.085 alcohol concentration (AC).
Room Air Rslt:0.000	The instrument is purging the sample chamber and external breath tube.

MODE OPTION P (Print Test)	
Display Message:	**Meaning/Required Action:**
1| BCPSQ Print Test	Select “P” and press “Enter.”
Please Scan ID or Press Enter Oper No? Oper Last Name? Oper First Name?	Scan the chemical test operator card and verify each data item by pressing “Enter” or press “Enter” and manually answer the questions.
The test record will print and the instrument will return to “Ready Mode.”	

MODE OPTION S (Standard Configuration) — Changing the Gas Cylinder	
Display Message:	**Meaning/Required Action:**
1| BCPSQ Configure Standard	Select “S” and press “Enter.”
Select Std (D/W/I)? D	Select “D” for Dry Gas Standard.
Please Scan Cylinder or Press Enter (camera flashes red)	Scan the 2D bar code on the top of the label on the cylinder. By pressing “Enter,” the operator may step through and change the information.
Standard Value? 0.080	Press “Enter” to verify alcohol concentration.
Standard Lot #? ######	Press “Enter” to verify lot number.
Standard Cyl #?	Enter the two digit number as it appears on the label of the gas cylinder.
Standard Expiration? MM/DD/YYYY	Press “Enter” to verify the date on the cylinder.
Please Wait Saving…	The instrument will save the data to print on all subject tests.
1| BCPSQ Configure Standard	Select “Q” and press “Enter” to return to “Ready Mode.”

MODE OPTION Q — Quit This Level
Pressing the “Q” key on your keyboard allows the operator to quit this level and return to “Ready to Start.”

APPROVED METHOD

The Approved Method is written to assure the operators, who are non-scientists, administer an analytical test without the need for supervision by a scientist. The current Approved Method is available on the Crime Laboratory's webpage at http://www.ag.nd.gov/CrimeLab/Lab.htm.

Note: If the Intoxilyzer® 8000 is not used for a set period of time, the unit will return to the "Standby Mode." However, if the officer leaves the Intoxilyzer® without completing a test sequence, the instrument will not go into "Standby Mode" until that test is aborted.

Following are examples of test records indicating ABA and ACA tests.

Intoxilyzer Test Record and Checklist
NDOAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer Alcohol Analyzer
North Dakota Model 8000 SN 80-004188
Location = TOXL 8164.13.00 06/09
08/29/2012 14:25

Test	AC	Time
01 Room Air	0.000	14:27
02 Subject Test 1	0.038	14:27
03 Room Air	0.000	14:28
04 Reported AC	0.038	14:27

No RFI Detected

Sub Name = DISCOVER, THE SPIRIT
Sub DOB = 02/01/1992
Sub Sex = Female Weight = 150
Test = DUI Cit = NA
Dr. Lic. = ND/DIS921456
Lot No = 15410080A1
Cyl No = 25
Expiration Date = 07/01/2012
County = 08 Oper No. = 777777

Deb Kashur
Operator Signature
DEB KASHUR

Remarks:
Minor in Consumption

Form 106-I8000

ABA Test for MIC/MIP

Intoxilyzer Test Record and Checklist
NDOAG Crime Lab. Div., Bismarck, ND 58501

CMI, Inc. Intoxilyzer — Alcohol Analyzer
North Dakota Model 8000 — SN 80-004188
Location = TOXL — 8164.13.00 06/09
08/29/2012 — 14:34

DRY CAL CHECK

Test	AC	Time
01 Room Air	0.000	14:34
02 Std. Gas	0.078	14:35
03 Room Air	0.000	14:35
04 Std. Gas	0.079	14:36
05 Room Air	0.000	14:36
06 Std. Gas	0.079	14:36
07 Room Air	0.000	14:37

Lot No = 15410080A1
Cyl No = 25
Exp Date = 07/01/2012
County = 08 — Oper No. = 777777

Deb Kashur

Operator Signature
DEB KASHUR

Remarks:

ACA

Form 106-I8000

ACA Test

INTOXILYZER® 8000 QUALITY ASSURANCE

Quality assurance starts with the chemical test operator. *The Approved Method to Conduct Breath Tests With the Intoxilyzer® 8000* must be followed with scrupulous compliance. The purpose of the *Approved Method* is to enable officers to perform an alcohol analysis of the breath without the direct supervision of the State Toxicologist.

The Quality Assurance (QA) included on each Driving Under the Influence (DUI), Actual Physical Control (APC), Minor Zero Tolerance (MZT), Boating Under the Influence (BUI), Snowmobiling Under the Influence (SUI), Hunting Under the Influence (HUI), or Off Highway Vehicle (OHV) subject test is as follows:

1. A “Diagnostic Test” for limited functions on the Intoxilyzer® 8000 is performed.

2. It allows for two adequate subject samples about 5 minutes apart with agreement in alcohol concentrations. Note: if the test has only one deficient subject breath, it may still be used as a valid test.

3. A calibration check is done.

4. “Room Air” testing is done before and after each alcohol concentration (AC) test.

Copies of all test records should be given to the prosecutor and the subject. An additional certified copy should be made and sent, along with the Report and Notice, to the ND Department of Transportation.

ETHANOL BREATH STANDARD

The Ethanol Breath Standard serves as a control to check if the Intoxilyzer® 8000 is analyzing the breath samples accurately. This standard is analyzed between the first and second breath sample of each subject test in the Custom Mode Sequence.

The Ethanol Breath Standard is also analyzed:

1. Each time a gas cylinder is replaced (performed by <u>any</u> certified chemical test operator).

2. Each time an Intoxilyzer® 8000 is exchanged (performed only by a field inspector).

To analyze the Ethanol Breath Standard, the **Ethanol Breath Standard Cylinder Report, Form 105-G** and a copy of the **calibration check test record (ACA), Form 106-I8000** must be filled out and submitted to the Crime Laboratory upon completion. At the same time, a new **Intoxilyzer® Record, Form 120-G** should be changed and the top portion of this form filled out and placed by the instrument for use.

Forms are available on the Office of Attorney General, Crime Laboratory Division web page: http://www.ag.nd.gov/CrimeLab/CrimeLab.htm

http://www.ag.nd.gov/CrimeLab/BreathAlcoholProgram/OperForms/OperForms.htm

(See "*Ethanol Breath Standard Cylinder Report Form 105-G*", and "*Intoxilyzer® Record Form 120-G*", following.)

ETHANOL BREATH STANDARD CYLINDER REPORT

OFFICE OF ATTORNEY GENERAL
CRIME LABORATORY DIVISION
Toxicology Section/Breath Alcohol Program
SFN 59282 (5-2011)

Chemical Test Operator Name (Print)		
Location	Intoxilyzer® Serial Number	
Gas Lot Number	Gas Cylinder Number	Gas Expiration Date

Check When Done:

- ☐ 1. Scan/Enter Gas Cylinder Information (Level 1, Function S).
- ☐ 2. Perform an ACA Test (Level 1, Function C).

  Write in the ACA Test Results (Reported to 3 Digits, Ex. 0.081).

  A. 0.__ __ __AC
  B. 0.__ __ __AC
  C. 0.__ __ __AC

- ☐ 3. Complete the Top Portion of the Intoxilyzer® Record (SFN50496, Form 120-G) and Place it by the Intoxilyzer® for Use.
- ☐ 4. File Previous Intoxilyzer® Record (SFN50496, Form 120-G) at the Intoxilyzer® Location at the Agency.
- ☐ 5. Send the Following to the Crime Laboratory:

  A. Ethanol Breath Standard Cylinder Report (SFN59282, Form 105-G).
  B. ACA Test Record.

Chemical Test Operator Signature	Date
Reviewed By (Crime Laboratory Use Only)	Date

Form 105-G

INTOXILYZER® RECORD
OFFICE OF ATTORNEY GENERAL
CRIME LABORATORY DIVISION
SFN 50496 (5-2011)

Intoxilyzer® Serial Number		Location
Gas Lot Number	Gas Cylinder Number	Gas Expiration Date

Test Date	Chemical Test Operator Number	Operator's Name (PRINT Last Name, First, MI)

FORM 120-G

AGENCY RETAIN AT INTOXILYZER® LOCATION

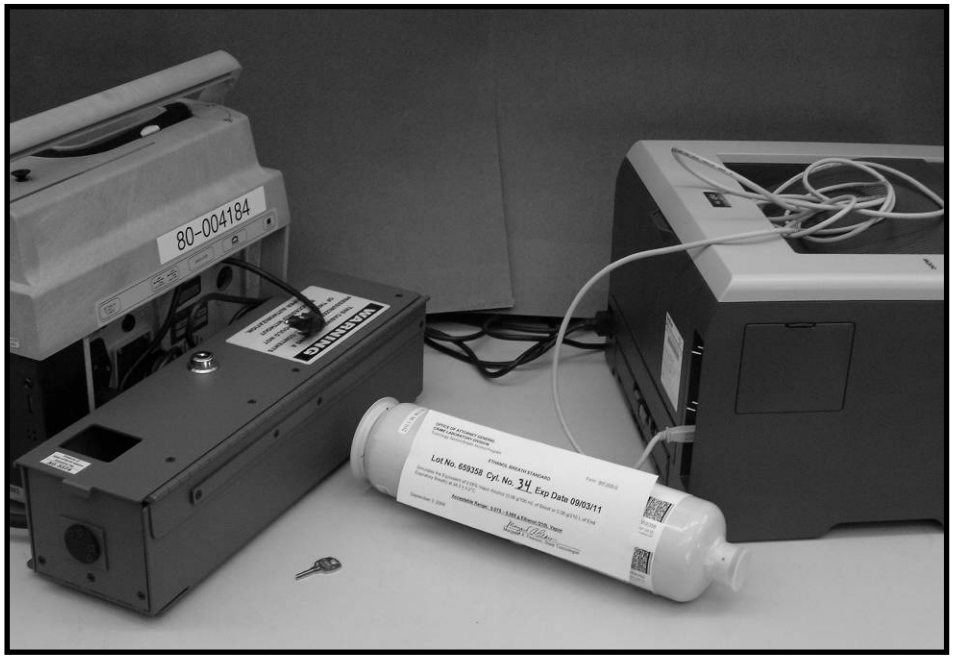
EXCHANGING INTOXILYZER® 8000 UNITS

Occasionally an Intoxilyzer® 8000 instrument must be exchanged for another unit. The following steps will help ensure necessary cords, paperwork, and equipment remain at your agency:

1. Turn off the main power and battery power switches;
2. Disconnect the USB cable to the printer from the instrument. Keep this cable and the printer at your agency;
3. Unplug the black power cord from the surge protector and tuck it in between the gas cylinder compartment and the instrument;
4. Remove the gas cylinder and the form “Ethanol Breath Standard Form BrF-008-G” from the locked cylinder compartment and store it in a safe place at your agency until needed; (See “*Ethanol Breath Standard Form BrF-008-G*.”)
5. Lock the cylinder compartment for shipment.

The Intoxilyzer® 8000 is now ready for transport. In exchange, you will receive a different Intoxilyzer® 8000 with a power cord attached. A Field Inspector will need to run an “install” prior to using the new instrument for subject tests.

INTOXILYZER® 8000 TRANSPORTS	
Transport to Crime Lab: Intoxilyzer® 8000 Power Cord	**Keep at Your Location:** Printer Printer Cable Gas Cylinder Form BrF-008-G for the Gas Cylinder Cylinder Compartment Key



Intoxilyzer 8000 Ready for Transport

FIELD INSPECTORS

The Intoxilyzer® 8000 instruments were purchased as mobile units to be used at sobriety checkpoints. Field Inspectors receive special training to allow them to install the instrument at a checkpoint or other location. **Checks on the calibration must be completed each time the Intoxilyzer® 8000 is moved**. **This is done even when the Intoxilyzer® 8000 is moved within an office.** The Field Inspector may do minor repairs. Following those repairs, tests are performed to check the calibration of the Intoxilyzer® 8000. Installation and repair checkout forms are completed. This paperwork is then forwarded to the Crime Laboratory.

TOXICOLOGY SECTION STAFF

The toxicology staff, in charge of breath testing, has completed factory training for the repair and maintenance of the Intoxilyzer® 8000. They are trained to install, repair, and inspect the instruments for certification by the State Toxicologist.

Formal inspections (performed each year) may be done in the field where the Intoxilyzer® 8000 is being used or at the Crime Laboratory. Tests include checks on the calibration of the instrument at various alcohol concentrations, a check on the RFI detector, and a check for interfering substances. An *Intoxilyzer® 8000 Inspection Form* is completed and filed.

An Intoxilyzer® 8000 inspection is completed each time major repairs are performed. Calibration of the instruments may be done in conjunction with repair and maintenance or inspections done at the Crime Laboratory. All original installation, repair, and inspection forms are maintained at the Crime Laboratory for court purposes.

All corresponding paperwork is filed at the Crime Laboratory. A list of Intoxilyzer® 8000 serial numbers, along with the date and location of the last inspection, is filed annually with the County Recorder (or the person in charge of records) in each county.

These documents are also found on the Office of Attorney General, Crime Laboratory Division, webpage:

http://www.ag.nd.gov/CrimeLab/CrimeLab.htm

PHARMACOLOGY OF ALCOHOL

Pharmacology is the study of how drugs affect people. In order to understand how alcohol affects the drinking driver, we first need to understand how it is absorbed, distributed throughout, and eliminated by the human body. We will then look at how alcohol affects individuals.

It was believed for many years that alcohol was a normal constituent of the human body. Specific analysis has demonstrated that, if present, the concentration in blood never exceeds 0.003 percent and usually is less than 0.001 percent Blood Alcohol Concentration (BAC), which is far below a detectable value. It is produced in the Gastrointestinal (GI) Tract by microbes acting on sugars.

ALCOHOL

Alcohol is the chemical name of a group of compounds having one or more hydroxyl (-OH) groups in the molecule. Alcohols are organic compounds that are classified as *Hydrophilic*, meaning they are infinitely soluble in water. This property allows easy absorption and distribution throughout the body.

ETHYL ALCOHOL:

Pure ethyl alcohol (ethanol) is a clear, colorless liquid having a characteristic odor. It is metabolized (primarily in the liver) to acetaldehyde, then to acetic acid, and then on to carbon dioxide and water. Ethanol is relatively safe when consumed in moderate quantities.

Note: In this manual, just as in the law, we will often refer to ethanol as “alcohol.” If we are discussing a different alcohol, we will specify which one.

METHANOL:

Methanol (made from the fermentation of wood) is methyl alcohol. It is commonly sold as gasoline antifreeze and a component of windshield washer solution. It also is a clear, colorless liquid and cannot normally be differentiated from ethyl alcohol. If consumed, it is often fatal since it is metabolized to formaldehyde which is extremely toxic.

ISOPROPANOL:

Isopropanol, another common alcohol, is a colorless liquid with a very distinct odor. It is sold as rubbing alcohol or in “iso-”gasoline antifreeze. The danger in drinking isopropanol is the toxicity of the metabolite acetone.

ETHYLENE GLYCOL:

Ethylene glycol, the primary ingredient of many antifreeze solutions, is mentioned here only as an example of another chemical type of alcohol. It does not usually present a problem to traffic law enforcement. The sweet taste is enticing to youngsters (and animals) and it is often fatal.

COMMON ALCOHOLS

The following table compares commonly found alcohols and their relative toxicity.

COMMON ALCOHOLS			
NAME	**USES**	**TOXICITY (APPROX)**	**METABOLITES**
ETHANOL Ethyl Alcohol Grain Alcohol	Beverage Solvent Medicinal Vehicle Fuel	400-500 mL	Acetaldehyde Acetic Acid
Methanol Methyl Alcohol Wood Alcohol	Denaturant Solvent Paint Remover Fuel	75 mL	Formic Acid Formaldehyde
ISOPROPANOL Isopropyl Alcohol Rubbing Alcohol	Denaturant Antiseptic	250 mL	Acetone
ETHYLENE GLYCOL Antifreeze	Coolant Solvent	100 mL	Oxalic Acid

ALCOHOLIC BEVERAGES

An alcoholic beverage is a drink containing ethanol. Alcoholic beverages are divided into three general categories (beers, wines, and spirits) and two classes (non-distilled/fermented and distilled).

In the United States, a standard drink is any drink that contains 0.6 ounces (13.7 grams or 1.2 tablespoons) of pure alcohol.[1]

Generally, this amount of pure alcohol is found in:

1. **12 ounces** of beer or wine cooler;
2. **8 ounces** of malt liquor;
3. **5 ounces** of wine;
4. **1.5 ounces** of 80-proof distilled spirits or liquor (i.e. gin, rum, vodka, or whiskey).

➢ **Which means …**

A 24 ounce tap beer contains the equivalent of **TWO** standard measures of alcohol; and …

an average restaurant serving of wine (10 ounce glass) is equivalent to **TWO** servings of alcohol; and

a single cocktail or mixed drink may contain **TWO, THREE, OR MORE** servings of alcohol.

[1] Centers for Disease Control & Prevention

DISTILLED BEVERAGES:

Distillation is a method of separating mixtures (for example: water may be distilled to remove impurities). Distillation of a fermented mixture produces a beverage with higher alcohol content (i.e. liquor). Common distilled liquors include gin, whiskey, rum, and vodka. If wine is distilled, the resulting product is brandy.

NON-DISTILLED (FERMENTED) BEVERAGES:

Non-distilled alcoholic beverages are prepared simply by fermentation. Fermentation in food processing typically refers to the conversion of sugar to alcohol using yeast. The maximum alcohol concentration obtained by the fermentation process is about 14% by volume. The yeast is inhibited or killed by higher concentrations of alcohol.

- **Wine** is created by the fermentation of grapes, although other fruits can be used. If the wine contains more than 14% alcohol, it has been fortified by adding alcohol to it (usually brandy). Common fortified wines include Port, Sherry and Vermouth.

- **Beer** is a non-distilled alcoholic beverage made from the starch in grain. The starch is converted to sugar by enzymes in malt. The sugars are then fermented with yeast to make alcohol.

ALCOHOL PERCENT:

Percent is the ratio of parts per 100. The percentage mark (%) denotes this ratio. The average percent alcohol in beer is 4% by volume (v/v). This indicates four mL of alcohol in 100 mL of water.

ALCOHOL PROOF:

Alcohol **proof** is a measure of **how much** alcohol (i.e., ethanol) is contained in an alcoholic beverage. It is defined as ***twice the percentage of alcohol by volume***. This means that liquor that is “86 proof” is 43% alcohol by volume.

ALCOHOL CONCENTRATION:

Alcohol concentration of various biological specimens is defined in the N.D.C.C as a mixed ratio of weight per unit volume.

UNITS OF ALCOHOL CONCENTRATION	
Specimen:	**Ratio of Weight Per Unit Volume:**
Blood	= g alcohol per 100 mL blood (or, more commonly, %)
Breath	= g alcohol per 210 L expired breath
Urine	= g alcohol per 67 mL urine

Nationwide, Alcohol Concentration (AC) is defined as the weight of alcohol per volume of sample. Therefore, the North Dakota Century Code (N.D.C.C.) conforms to that standard.

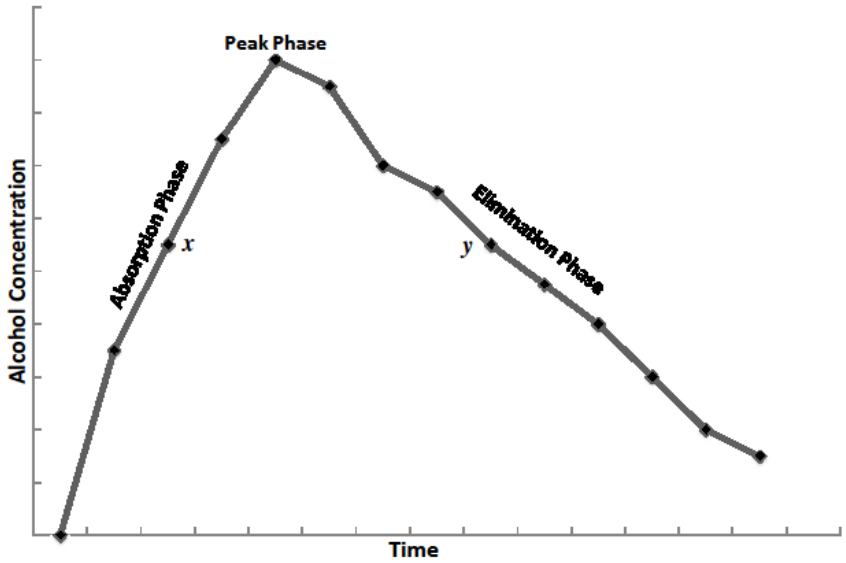
DISPOSITION & FATE OF ALCOHOL IN THE BODY

Alcohol is a drug. In order for a drug to be effective, it must be absorbed into the body, it must arrive at the target organ, and it must be of sufficient quantity to achieve the desired effect. The body then reacts by eliminating this foreign substance. The three phases of alcohol in the body are: **absorption**, **distribution** (peak alcohol concentration), and **elimination**.

ABSORPTION OF ALCOHOL

The **absorption** phase occurs as long as alcohol is entering the blood stream faster than the body is eliminating it; the blood alcohol concentration is on the increase. The **peak** occurs when the body is absorbing and eliminating it at the same rate, therefore, causing the blood alcohol concentration to remain level. The **elimination** phase occurs when the body is eliminating the alcohol faster than it is absorbing it; therefore, the blood alcohol concentration is decreasing. (See figure below.)

Generalized Ethanol Concentration Curve



X, Y = THE SAME ALCOHOL CONCENTRATION AT DIFFERENT TIMES

Alcohol can enter the body through oral ingestion, inhalation, injection, absorption, and enema. However, the most popular means is oral ingestion (drinking).

Alcohol in the mouth is absorbed through the lining and into the blood vessels surrounding the mouth. A mouth rinsed with an alcoholic beverage will be alcohol free in 15 minutes or less (most of it is absorbed in 3 to 5 minutes.) This is important when determining a BAC. The high concentration of an ingested beverage (e.g. beer which is four percent alcohol) may cause a false high reading on a breath alcohol

concentration ranging between 0 and 0.5 percent. In North Dakota, a 20-minute deprivation period is required. Alcohol also is absorbed directly from the stomach into the blood.

RATE OF ABSORPTION:

No two people process (absorb) alcohol at the same rate. The rate of absorption of alcohol is affected by several factors including whether there is food in the stomach, what type of food, the concentration of the drink, the type of drink mix, the subject's gender, weight and body composition, and general health.

Men tend to handle alcohol better than women because they are generally larger and carry less body fat. Any food in the stomach generally slows the rate of absorption; drinking on an empty stomach increases the rate of absorption. Alcohol mixed with water or fruit juice is absorbed more slowly than alcohol mixed with carbonated beverages. Persons suffering from malnutrition generally have a poor absorption rate. Certain drugs are capable of influencing the rate of absorption.

Individuals involved in long-term drinking (3 to 4 hours), usually reach peak alcohol concentrations approximately 30 to 90 minutes after consuming the last drink.

DISTRIBUTION OF ALCOHOL IN THE BODY

Alcohol is soluble in water in all proportions. It is only slightly soluble in other body tissues. Therefore, alcohol is distributed throughout the body in proportion to the water content of that fluid or tissue. The tissues having the highest concentration of water have the most alcohol when distribution is complete. Distribution is accomplished within 1 to 2 hours after consumption.

Alcohol is carried throughout the body in the blood. The alcohol leaves the stomach and small intestines and travels through the portal vein to the liver. The blood transports it to the right side of the heart. The blood containing alcohol then is transported to the lungs where oxygen enters the blood and some water, carbon dioxide, and alcohol leaves the lungs through the bronchi and oral cavity as expired breath.

It is the alcohol concentration of the breath leaving the lungs that is measured to determine driving impairment.

From the lungs, the blood containing alcohol returns to the left side of the heart. The heart then pumps the blood through the carotid artery to the brain. (Note: The depressant effect on the brain and central nervous system causes the majority of the

impairment. This impairment is proportional to the blood alcohol concentration around the brain.)

The blood continues to circulate to other body organs and returns to the liver. The cycle repeats itself until the alcohol is eliminated from the body. The distribution time of the alcohol, from absorption until the blood alcohol reaches the brain, is approximately 3-4 minutes.

ELIMINATION OF ALCOHOL

Alcohol is eliminated through expiration, excretion, and metabolism.

EXPIRATION:

Alcohol leaves the blood in the lungs and becomes part of the expired breath. It is exhaled with water and carbon dioxide. The technology of the Intoxilyzer® 8000 enables the operator to detect low amounts of alcohol in the breath and quantify it accurately.

The North Dakota Century Code (N.D.C.C.) refers to the breath sample as “end expiratory breath.” This simply means the last breath blown into the instrument.

EXCRETION:

Alcohol is excreted through salivation, perspiration, and urination. Because sweat contains traces of alcohol, it can often be detected by the human nose hours after consumption. A larger amount of absorbed alcohol is excreted in the urine.

Urine can be obtained as an evidentiary sample in North Dakota. It is necessary to have the subject void the bladder of old urine and then provide a second specimen at least 20 minutes after emptying the bladder. The second specimen is collected and analyzed for alcohol concentration.

Excretion and exhalation combined account for between 5 and 10 percent of the alcohol that is given off as unchanged alcohol molecules.

METABOLISM:

The most significant loss of alcohol (approximately 90 percent) by the body is by metabolism. Metabolism (often referred to as burn-off rate) is one way the body rids itself of foreign substances. The majority of the alcohol is metabolized in the liver which excretes enzymes that break down the alcohol and neutralize it.

The approximate rate of the metabolism can be determined by calculating the alcohol concentration over time in the elimination phase. The generally accepted elimination factor is 0.015 g alcohol per 100 mL blood per hour.

- **Example: A man was tested and found to have a blood alcohol of 0.18 alcohol concentration (AC).**

1. **What will his AC be in 2 hours?** Calculations: 0.015 AC per hour x 2 hours = 0.03 AC lower in 2 hours. Thus, 0.18 – 0.03 = **0.15 AC 2 hours later**.

2. **How long will it take this man to return to 0.000 AC?** Calculations: 0.18 AC / 0.015 AC per hour = **12 hours**.

EFFECTS OF ALCOHOL

Alcohol is considered to be a drug and is usually classified as an irregularly descending, general, central nervous system depressant. “Irregularly descending,” means the front part of the brain is more sensitive to the effects of alcohol. As the alcohol concentration increases, the front part of the brain becomes more impaired. The progression of the impairment moves toward the back and base of the brain as the alcohol concentration in the blood increases. By depressing the action of the nerves in the brain and the rest of the body, mental and physical performance is decreased.

Judgment is the first skill to be impaired by alcohol, followed by impairment of visual perception, visual acuity, and reaction time functions. The stages of alcohol impairment are listed below. No one will exhibit all of the signs of impairment listed for a particular alcohol concentration. The ranges of impairment overlap and are to be used as a guide to symptoms and signs to observe and/or include in a report.

MELLANBY EFFECT:

The Mellanby effect is the phenomenon whereby the drinker’s perception of the effects of alcohol change between the absorption and the elimination phases of alcohol consumption.

During the **absorption** phase, the body recalls its condition before consuming alcohol—the drinker tends to underestimate the level of impairment and over-estimate his abilities. This phenomenon makes the driver in the range of 0.08 to 0.12 particularly dangerous because he/she is willing to take risks.

During the **elimination** phase, the body tends to recall its condition during the highest point of alcohol impairment, causing the drinker to over-estimate the level of intoxication.

STAGES OF IMPAIRMENT		
Ethyl Alcohol Level (Percent by Weight/Blood)	Stage of Alcoholic Influence	Clinical Signs/Symptoms
0.01-0.05	Sobriety	No apparent influence; Behavior nearly normal by ordinary observation; Slight changes detectable by special tests.
0.03-0.12	Euphoria	Mild euphoria, sociability, and talkativeness; Diminution of attention, judgment, and control; Increased self-confidence, decreased inhibitions; Loss of efficiency in finer performance tests.
0.09-0.25	Excitement	Emotional instability, decreased inhibitions, and loss of critical judgment; Impairment of memory and comprehension; Decreased sensatory response, increased reaction time; Some muscular incoordination.
0.18-0.30	Confusion	Disorientation, mental confusion and dizziness; Exaggerated emotional states (fear, anger, grief, etc.); Disturbance of sensation (diplopia, etc.) and of perception of color, form, motion, and dimensions; Decreased pain sense; Impaired balance, muscular incoordination, staggering gait, slurred speech.
0.27-0.40	Stupor, Apathy	General inertia, approaching paralysis; Markedly decreased response to stimuli; Marked muscular incoordination; inability to stand or walk; Vomiting; incontinence of urine and feces; Impaired consciousness; sleep or stupor
0.35-0.50	Coma	Complete unconsciousness; coma; anesthesia; Depressed or abolished reflexes; Subnormal temperature; Incontinence of urine and feces; Embarrassment of circulation and respiration; possible death.
0.45+	Death	Death from respiratory paralysis

Kurt M. Dubowski, Ph.D, FAIC. Director, Dept. of Clinical Chemistry & Toxicology, University of Oklahoma

PERFORMANCE OF DRIVING-RELATED TASKS	
BAC Range	Impairment
Low Doses BAC <0.05 g/dl)	Impaired visual perception, acuity, and complex reaction time: • Impaired dynamic visual acuity (the ability to see detail in an object in motion); • Impaired control over eye movements and the ability to merge two images into one; • Increase duration of eye fixations and therefore reduced eye movements; • Impaired divided attention (the ability to discriminate among stimuli and respond appropriately as quickly as possible); • Impaired divided attention (the ability to attend to more than one thing at a time); • Impaired complex reaction time (the ability to discriminate among stimuli and respond appropriately as quickly as possible).

Moderate Doses
BAC 0.05-0.08 g/dl)
	Impaired vigilance, judgment, reaction time, and psychomotor performance:
	• Impaired concentrated attention (the ability to pay close attention to one thing)
	  o Impaired vigilance (the ability to attend to or to detect an event over a long period of time)
	  o Impaired vergence (the ability to change focus rapidly, following, or tracking a moving object)
	• Impaired saccadic movement (rapid eye movement which allows perception of objects in peripheral vision)
	• Impaired dark adaptation
	• Impaired information processing (some reports indicate impairment at 0.02 g/dl)
	• Impaired judgment
	  o Decision making - Risk-taking - Emergency response
	• Impaired reaction time
	• Impaired psychomotor performance (the ability to make highly-controlled muscular movement of a number of limbs simultaneously)
	• Impaired compensatory tracking (tracking to maintain an index at a predetermined position). This type of tracking is involved in maintaining a vehicle in its proper lane of travel.
	• Impaired critical tracking (tracking of moving object and compensating to maintain relative position). This type of tracking would be involved in compensating for unexpected movements of other vehicles being tracked.
	• Increased numbers of errors:
	  o Steering
	  o Gear changing
	  o Braking response time
	  o Tracking
	  o Vehicle positioning
	  o Lane changing
	  o Speed maintenance
	  o Acceleration
	• Horizontal Gaze Nystagmus

BAC 0.08 g/dl	North Dakota – Legal Drinking The National Safety Council's Committee on Alcohol and Drugs takes the position that a concentration of 80 milligrams of ethanol per 100 milliliters of whole blood (0.08% w/v) in any driver of a motor vehicle is indicative of impairment in his driving performance.
Higher Doses BAC > 0.12 g/dl	Problem Intoxication. When a BAC of 0.12 g/dl is rapidly attained, the vomit center in the brain is stimulated, but some inhibition of gag reflex that protects the airway from the aspiration of emesis also occurs. • Unsteady gait and sedation in non-tolerant individuals. • At 0.20 g/dl is attained, the vomit center is inhibited and more toxic doses may be achieved without the protection afforded by emesis. • Above 0.20 g/dl, pronounced loss of muscular control and instinctive behavior. • Above 0.35 g/dl; coma, seizures, and cardio-respiratory failure.

"The Effect of Alcohol on Sensory Functions" by Robert B. Forney, Jr.; Ph.D.; DABFT, Medical College of Ohio; Department of Pathology; Toledo, Ohio. (Presented at the International Association for Chemical Testing Annual Meeting; Missoula, MT, 1997).

CARE OF THE INEBRIATED DETAINEE

Each agency should have a policy as to how to handle the inebriated offender. Often the offender is detained at a high alcohol concentration (0.25 AC or greater). The policy should include proper medical protocol and required surveillance.

Metabolism of alcohol may be stimulated by fructose; however, this is limited by its toxicity. Cold showers, exercise, and caffeine are of little value to detoxify an intoxicated person. Metabolism over time is the only way to sober up the drinking subject.

WEATHER EXPOSURE

Occasionally, individuals will remove outerwear in the frigid weather because they feel flushed. The flushing occurs when the blood vessels dilate. This causes the body to give off heat near the temperature sensors in the skin. Because individuals are feeling warm, they shed their clothing and inadvertently suffer from exposure to the cold.

VOMIT CONTROL CENTER

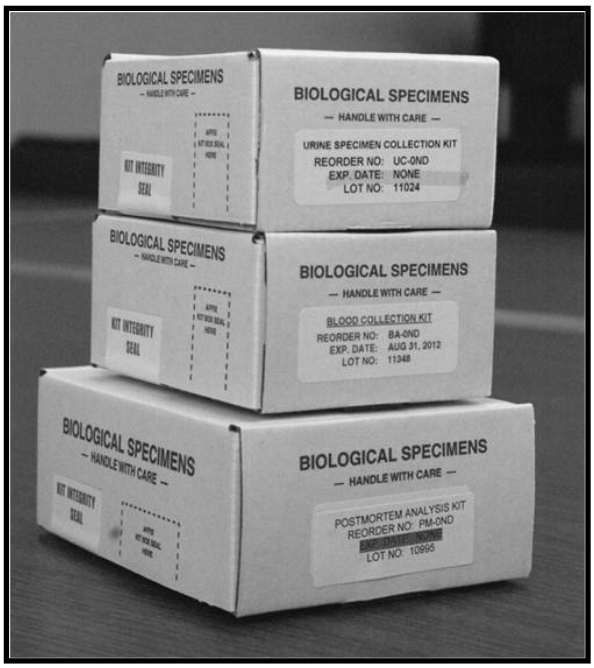
The human body has a vomit control center (VCC) in the stomach to rid the body of irritating or toxic substances. At alcohol concentrations greater than 0.12 AC, the VCC is depressed and will not react. As a result, alcohol in the GI Tract continues to be absorbed, often to lethal levels. When an individual consumes a great deal of alcohol in a short period of time, the alcohol concentration can rise rapidly, bypass the VCC trigger, and override the detoxification function of vomiting.

BLACKOUTS

The way the brain functions is still largely unknown. One phenomenon that occurs in the alcoholic is blackouts. It is regarded as one of the first signs of alcoholism. No one is able to explain why blackouts occur. It is a time when an intoxicated person appears to be fully functional; however, he has no memory of the events. A more peculiar aspect is that when the person is brought to the same state of intoxication, he may remember the prior events once experienced in a blackout. Blackouts have been reported from minutes to months in length.

BLOOD, URINE, & POSTMORTEM KITS

Following are kits pictured with their respective box labeling. Note that the kit label identifies whether the kit is to be used for collecting blood, urine, or postmortem samples and indicates the expiration of the kit, if applicable. (See Figure below.)



Blood, Urine & Postmortem Kits

BLOOD SPECIMENS

Since the majority of these samples are collected with the intent of using the results of the analysis in court proceedings, it is important that the specimens are collected and handled in accordance with the rules of evidence.

The specimen container has been prepared and sealed by a vendor. It is shipped to agencies directly from the Office of Attorney General, Crime Laboratory Division. To maintain integrity of the kit, the container must remain sealed. The kit integrity seal should be broken in the presence of the qualified blood drawer, the subject, and the law enforcement officer involved. Both the specimen collector and the arresting officer should note, on the form, the condition of the seal prior to opening the kit box. The **Submission for Blood Form 104** is enclosed in the kit**.**

The mailing box contains the following items: blood collection tube, tube and needle holder, safety needle, bubble-pack blood tube protector, liquid absorbing sheet, blood tube specimen security seals, Ziploc bag, prep pad, kit box shipping seal, FDA insert, and Submission for Blood Form 104. Note: **If anything is missing or damaged,** refer to the "*Memo to Emergency Room Supervisors and Personnel*" which has been distributed to the medical facilities and is available on the Crime Lab's webpage, http://www.ag.nd.gov/CrimeLab/Lab.htm.

The current kits are tagged with a lot number indicating the contents**.** The vacutainer tube contains two chemicals that act as an anti-coagulant and preservative to prevent the generation of alcohol after the blood sample is drawn. **These chemicals are highly toxic.** The vacutainer tubes are to remain stoppered to prevent skin contact with the chemicals. In case of contact, wash the affected area immediately and seek medical attention.

COLLECTION OF BLOOD SAMPLES:

The materials contained in the blood alcohol kit allow the medically-qualified individual to collect blood samples for the purpose of quantifying the alcohol concentration. (See the list of Approved Designations of Individuals Medically Qualified to Draw Blood, available on the Crime Lab's webpage.)

Note: Care must be taken to avoid contact with any possible blood-borne pathogens. Consult the blood collector for information.

- **The officer should open the kit in the presence of the subject and note in the lower portion of the Submission for Blood (104) form that the Kit Integrity Seal was intact before use.**

Upon opening the kit, the blood specimen collector should disinfect the skin of the subject with the disinfectant pad provided, or a suitable alternative[2], and withdraw the blood sample with the aid of the needle, guide or holder, and the vacutainer. If necessary, a sterile needle and syringe can be used to withdraw the blood and introduce it to the vacutainer tube. The rubber stopper of the vacutainer should not be removed from the tube.

- **The officer should retain custody of the blood sample from this time on.**

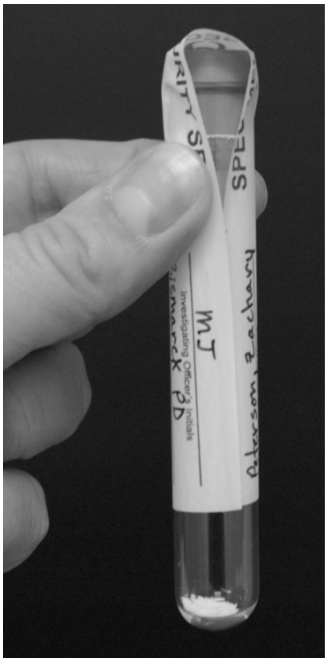
The officer should complete the Specimen Security Seal (please write legibly and do not use a gel pen). **Make sure the subject's name is on the Specimen Security**

[2] Solution containing less than 0.02% alcohol.

Seal. Affix the completed Specimen Security Seal to the vacutainer tube. (See below.) Place the blood tube and the absorbent pad in the plastic bag. This prevents any exposure to blood in case of tube breakage. **Complete the Submission for Blood (104) Form.**

The top portion of the completed **Submission for Blood Form 104 should be placed outside the plastic bag, inside the kit**. Seal the kit box with the shipping seal provided.

Specimen Security Seal



Affixed Specimen Security Seal

SUBMISSION PAPERWORK (BLOOD):

Except for signatures, all information on this form should be neatly printed. The **Submission for Blood Form 104** is split by a perforated line and should be handled as follows:

1. The officer completes all information available on the top portion (Section One). Indicate whether the sample is being done for alcohol and/or drug analysis. The officer may request a specific drug or a drug screen of commonly abused drugs. NOTE: some drugs might be found only in urine; therefore, both blood and urine should be obtained when requesting drug screens, in which case, the two specimen kits should be taped together and submitted. The county of arrest should be noted. The "Remarks" section is to note any additional information the officer feels is important.

2. The left side middle section of the form (Section Two) is complete by the blood collector. The blood collector **must** provide the initials of professional licensure by his/her name or signature.

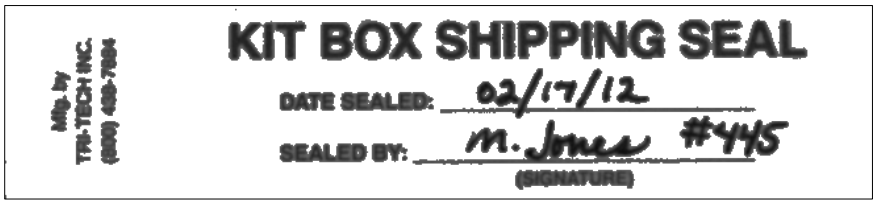
3. **Do not complete** any information on the right side middle section of the form (Section Three) – this is completed by the Crime Laboratory.

4. The bottom portion of the form (Section Four) is to be completed by the officer and retained with the officer's records concerning this case.

3. Tear the Submission For Blood (104) form at perforation. Fold the top portion of the form and place it in the kit, but outside the plastic bag containing the blood tube and absorbent pad.

4. The officer should complete the Kit Box Shipping Seal and affix it to the box. (See figure, below.)

- **The officer should complete the above steps immediately following the blood draw, in the presence of both the blood collector and the subject.**



Kit Box Shipping Seal (Blood)

CUSTODY OF BLOOD SPECIMEN:

The officer must maintain custody of the blood specimen until it can be mailed or hand-delivered. A locked refrigerator or storage cabinet will suffice. The specimen may be hand-delivered or mailed to the Crime Laboratory. For security reasons, the Crime Laboratory will not accept postal items with insufficient postage.

Avoid placing the kit box in an outdoor mail box during extreme weather conditions. During hot summer days, the sample may pop the vacutainer stopper; during cold winter days, the sample may freeze and break the vacutainer tube.

URINE SPECIMENS

Since the majority of these samples are collected with the intent of using the results of the analysis in court proceedings, it is important that the specimens are collected and handled in accordance with the rules of evidence.

The specimen container has been prepared and sealed by a vendor. It is shipped to agencies directly from the Office of Attorney General, Crime Laboratory Division. To maintain integrity of the kit, the container must remain sealed. The kit integrity seal should be broken in the presence of the subject and the law enforcement officer involved. Notation as to the condition of the seal prior to opening should be made by the specimen collector on the bottom of the **Submission for Urine Form 104-U** enclosed in the kit.

The mailing box contains the following items: a closed plastic specimen container containing a white powder, a seal for the container, a Submission for Urine Form 104-U, a plastic bag containing an absorbent pad, and a return mailing label. The kits are tagged with a lot number.

Note: The white solid in the container is sodium fluoride. This chemical is highly toxic and due care should be exercised. If the chemical is ingested, medical attention should be obtained. Specimen handlers should wear plastic gloves to prevent exposure to this chemical and biohazards.

COLLECTION OF URINE SAMPLES:

The officer should open the kit in the presence of the subject and note in the lower portion of the Submission for Urines (104-U) form that the Kit Integrity Seal was intact before being used.

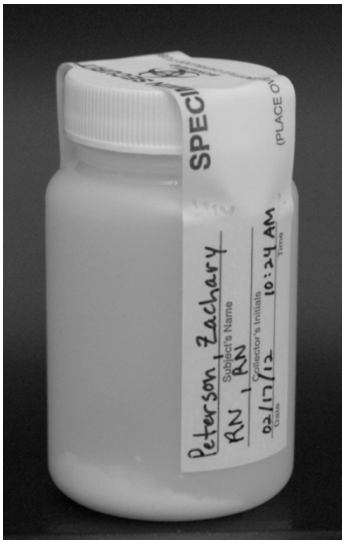
The officer should remove the entire seal under the lid of the plastic bottle. **The subject should be observed during the urine specimen collection whenever possible.** The urine specimen need not be collected in a medical facility. After the subject has urinated into the plastic bottle, replace the lid securely to avoid loss of urine or leaking during transport.

- **The officer should retain custody of the urine sample from this time on.**

The officer should complete the Specimen Security Seal (please write legibly and do not use a gel pen). The label should be filled out with the subject's name, the time and the date the specimen was collected, and the initials of the officer or the medical assistant sealing the container.

Place the specimen security seal over the top of the lid with the two ends pressed down on either side of the container. (See figure, below.) Place the container in the

plastic bag with the absorbent pad to prevent leakage of the specimen during shipment.



Specimen Security Seal & Kit Box Shipping Seal

SUBMISSION PAPERWORK (URINE):

Except for signatures, all information on this form should be neatly printed. The Submission for Urine Form 104-U is split by a perforated line and should be handled as follows:

1. The officer completes all available information on the top portion (Section One), indicating whether the sample is being done for alcohol and/or drug analysis. The officer may request a specific drug or a drug screen of commonly abused drugs. It should be understood that some drugs might be found only in blood; in that case, a separate specimen of blood should be submitted and both specimen kits taped together and submitted. Note the county of arrest. Use the “Remarks” section to note any addition information of importance.

2. **Do not complete** the middle portion (Section Two) – it is completed by the Crime Laboratory.

3. The bottom portion (Section Three) is completed by the officer and retained with his/her records concerning this case.

4. Tear the Submission For Urines (104-U) at perforation. Return the top portion in the mailing box along with the urine sample, making sure to fold and wrap the form around the plastic bag containing the urine container and absorbent pad before placing it in the mailing box.

5. The officer completes the Kit Box Shipping Seal and affixes it to the box.

CUSTODY OF URINE SPECIMEN:

The officer must maintain custody of the urine specimen until it can be mailed or hand-delivered. A locked refrigerator or storage cabinet will suffice. The sealed kit may be delivered or mailed to the Crime Laboratory.

POSTMORTEM SPECIMENS

The materials contained in the postmortem kit allow the medically-qualified individual to collect samples for the purpose of quantifying the alcohol concentration and performing a drug screen analysis on deceased subjects.

COLLECTION OF POSTMORTEM SPECIMENS:

The National Highway Traffic Safety Administration (NHTSA) compiles data on all traffic crashes resulting in a fatality to provide an overall measure of highway safety. Section 39-20-13 N.D.C.C. **requires blood, urine, and vitreous humor specimens be drawn by the county coroner from all victims**. The specimens are submitted to the Crime Laboratory for analysis of alcohol, drug, and carbon monoxide content.

The highway safety program relies heavily on support of law enforcement officers throughout the state to assist coroners in collection of samples. Postmortem analysis kits are provided to all county coroners, NDHP troopers, and local law enforcement agencies, upon request. Replacement kits are automatically sent out upon receipt of completed kits.

A sample should be obtained from all victims of a crash. The drivers, passengers, pedestrians, OHV drivers, and bicyclists are studied as primary decision-makers in the accident. Passengers are analyzed to see if the "designated driver" program is working effectively. The officer's investigation is a crucial component of this program. The officer’s report determines what role each victim plays in the accident.

SUBMISSION PAPERWORK (POSTMORTEM):

The law is specific that the results of the analysis are to be used for statistical purposes only. Therefore, if the coroner or investigating officer wishes to receive a copy of the analysis, **both the Toxicology Traffic Fatality Study (blue form) and Coroner Request for Toxicological Analysis (yellow form) must be completed**. This will alert the Crime Laboratory that this is part of an ongoing criminal investigation.

- **These forms have been combined into one form entitled, “*Coroner and Traffic Fatality Request for Toxicological Analysis”* in the newest kits in use**.

It is also important to c**omplete the submission paperwork with the name and address of the person/agency to receive the analysis report and the replacement kit.**

CUSTODY OF POSTMORTEM SAMPLES:

Legibly complete the specimen security seal(s) for each sample being submitted. Wrap the seal over the top and down the sides of the sample(s). Place the sealed specimen(s) in the foam holder and then in the Ziploc bag provided. Seal the bag and place it into the kit box. Place the completed submission form(s) in the kit box (**not** in the plastic bag containing the samples). Close the kit box. Include your return address information on the top left side of the kit box. Affix the return address label for the Crime Laboratory on the kit box. Seal the kit box with the Kit Shipping Seal.

Kit Seals-Specimen Security Seal & Kit Box Shipping Seal (Postmortem)

Maintain custody of the kit box until it can be mailed or hand-delivered. A locked refrigerator or storage cabinet will suffice. The specimen may be hand-delivered or mailed to the Crime Laboratory. For security reasons, the Crime Laboratory will not accept postal items with insufficient postage.

Avoid placing the kit box in an outdoor mail box during extreme weather conditions. During hot summer days, the sample may pop the vacutainer stopper; during cold winter days, the sample may freeze and break the vacutainer tube.

THE ADMINISTRATIVE HEARING PROCESS

- **The most common reasons a case is dismissed are as follows:**

REASONS FOR DISMISSAL WITHOUT A HEARING:

1. Problem in the Report and Notice form;
2. Problem in the test record and there was no valid test;
3. Testing for alcohol concentration was attempted, but there is no copy of the test record in the hearing file;
4. The hearing file arrived late and the hearing officer could not schedule a hearing;
5. Essential documents are unavailable.

PROBLEMS IN THE REPORT AND NOTICE FORM:

1. Officer did not date the temporary permit;
2. Officer did not sign the temporary permit;
3. Officer did not sign the statement of probable cause;
4. Testing for alcohol concentration was done, but the test results are not written on the Report and Notice form;
5. Time of driving/physical control/crash is not on the Report and Notice form;
6. Testing for alcohol concentration was not done within two hours after the time of driving/physical control/crash;
7. The officer's statement of probable cause does not show a reasonable suspicion to stop or reason to lawfully detain;
8. The officer's statement of probable cause does not show probable cause to arrest or lawfully detain the driver;
9. The form is otherwise incomplete.

INTOXILYZER® 8000 TEST RECORD PROBLEMS:

1. Test record is uncertified;
2. Test record was not signed by the Intoxilyzer® 8000 operator;
3. Test is invalid due to an invalid sample ("INVALID SAMPLE X.XXX");
4. Test is invalid because the difference between the two subject tests is over 0.020;
5. Test is invalid because both subject tests are deficient samples;
6. Test is invalid because "Interferent" was noted on the test record;
7. The first test was invalid due to an invalid sample and the Intoxilyzer® 8000 operator did not wait 20 minutes before starting the second test;
8. The first test was invalid because the difference between the two subject tests was greater than 0.020 and the Intoxilyzer® 8000 operator did not wait 20 minutes before starting the second test;
9. Test record is illegible;
10. Test record is not complete (improper copying; deleted or cut off part of the record).

PROBLEMS IN BLOOD TEST RECORDS:

1. A portion of the Form 104 completed by the officer and by the person who drew blood is incomplete;
2. The Form 104 does not have any indication that the person who drew blood was legally qualified to draw blood for testing for alcohol concentration;
3. The certification page from the Crime Laboratory is missing.

REASONS FOR DISMISSALS WHEN A HEARING IS HELD:

1. The arresting officer did not appear for the hearing;
2. The evidence shows that a second test was attempted but the hearing file does not have a copy of the second test record;
3. The evidence shows there was an inadequate legal basis for the stop;
4. The evidence shows there was an insufficient basis for the arresting officer's

belief that the petitioner was DUI/APC;

5. The evidence shows there was a problem with some aspect of testing for alcohol concentration;

6. The evidence shows that what happened in a refusal case should not be considered to be a refusal;

7. The evidence shows that the arresting officer was outside his or her jurisdiction;

8. The evidence shows that there wasn't actually an arrest in a case in which the arrest is an issue to be determined;

9. Other.

REQUEST FOR SUBPOENA AND/OR HEARING NOTICE & THE REPORT AND NOTICE FORM:

Use the *Request for Subpoena and/or Hearing Notice* form to request that a subpoena be issued or a hearing notice sent to someone for a North Dakota Department of Transportation hearing.

It is important to properly complete the forms; print or type legibly. If possible, submit the ***Request for Subpoena and/or Hearing Notice*** with the ***Report and Notice*** form.

REQUEST FOR SUBPOENA AND/OR HEARING NOTICE

Please print or type legibly.

CASE IDENTIFICATION:	REQUEST MADE BY:
_____ Name of Driver	_____ Requester's Name
_____ Operator's License #	_____ Mailing Address
_____/_____/_____ Driver's Date of Birth	_____ City/State/Zip
_____/_____/_____ Date of Incident	(_____)_____ Phone (_____)_____ Fax
_____/_____/_____ Date of Report & Notice:	_____ Case No.

I REQUEST THAT A:

- ☐ Subpoena
- ☐ Notice of administrative hearing under N.D.C.C. Ch. 39-20

be sent to the following individual:

_____ Name

_____ Address

_____ City/State/Zip

AGENCY INFORMATION ☐ NDHP ☐ _____ PD ☐ OTHER ☐ _____ SO

☐ Service of the subpoena is requested.

NOTE: Subpoenas will be mailed unless formal service is requested. NDDOT will not pay fees or expenses for witnesses requested by the petitioner.

REASON FOR REQUEST

- ☐ Witness to driving or accident.
- ☐ Other (please explain):

_____ Date

_____ Signature

NORTH DAKOTA CENTURY CODE

North Dakota laws are contained within the State Constitution and the North Dakota Century Code (N.D.C.C.). The N.D.C.C. is maintained by the North Dakota Legislative Council, which updates the Code following each legislative session. (Legislative sessions are held in the odd-numbered years, beginning in January.)

The effective date of legislative changes is generally August 1st of the legislative year. However, if the Bill containing a change has an emergency clause, the change is effective as soon as the Bill is filed with the Secretary of State's office.

The current N.D.C.C. can be downloaded and printed from the Legislative Council's website at: http://www.legis.nd.gov/information/statutes/cent-code.html.

PRACTICAL TESTS

The following experiments are designed to help understand situations that may arise at various Intoxilyzer® 8000 locations. Read the entire lab test before beginning the test sequence. If you have any questions as to how to conduct the test, ask for clarification. Upon completion of the following tests, you are expected to perform additional tests with known test solutions to complete a minimum of 30 tests. All the tests should be recorded in your lab notebook and reviewed by the lab instructor.

INSTRUCTIONS

1. Run the practical tests as follows:

2. For these tests, indicate you have “ascertained a 20 minute deprivation period.”

3. Start the appropriate mode.

4. Swipe your chemical test operator card when requested.

5. Swipe the practice driver’s license when requested.

6. Record the information on the Form 120-G while the test is running.

7. Identify what the test record is by writing the test letter under remarks.

8. Be sure to sign every test record as it is evidence.

TYPES OF LAB TESTS

NORTH DAKOTA CUSTOM MODE SEQUENCE (CMS MODE):

1. Press “Esc,” “Esc” (in one second), followed by the “Start Test” switch.

2. This mode must be followed for the following: DUI, APC, MZT, BUI, and HUI.

3. You may reuse the mouthpieces while training in this class; however, when you conduct tests in the field, please follow the *Approved Method*.

CALIBRATION CHECK (ACA MODE):

1. Press “Esc,” “Esc” (in one second), then “Enter.” The Menu “1| BCPSQ” will be displayed.

2. Press “C” for a calibration check, then “Enter.”

ONE BREATH TEST (ABA MODE):

1. Press “Esc,” “Esc” (in one second), then “Enter.” The Menu “1| BCPSQ” will be displayed.

2. Press “B” for breath, then “Enter.”

Note: This may be used for MIC, public intoxication, parent requests, work release, and general court orders when the “*Approved Method to Conduct Breath Tests*” is not required.

DEFINITIONS

1. **Subject Test (ST).** Sample blown into the Intoxilyzer® 8000 by the operator.

2. **Calibration Check (CS).** Calibration check done with an Ethanol Breath Standard.

3. **Adequate Sample.** Sample blown through the simulator long and hard enough until the zero appears to the left of the decimal on the display screen.

4. **Deficient Sample.** Sample blown through the simulator hard enough to start the tone, but the subject quits blowing before a sufficient sample is delivered.

INTRODUCING A SUBJECT SAMPLE VIA SIMULATOR

The Guth Simulators take the place of a drinking subject. Follow the steps below to introduce a breath alcohol sample into the Intoxilyzer® 8000:

1. Disconnect the hose from the quick disconnect on the simulator;

2. Connect the breath hose of the Intoxilyzer® 8000 to the simulator quick disconnect when the display reads “Please Blow …”;

3. Attach a mouthpiece to the hose on TOP of the simulator;

4. Blow through the mouthpiece to produce an adequate or deficient sample as directed. (See Figure, below.)

Proper Connection for a Simulator Test

TESTS

- **Calibration Check or ACA Test:**

Mode: ACA (**Check Calibration of Intoxilyzer® 8000**)

Note: This test checks the calibration of the Intoxilyzer® 8000. It must be done every time the gas cylinder is replaced. (Calibration checks are listed on test records as a "Dry Cal Check.")

1. Press "Esc", "Esc", followed by "Enter."
2. When "1| BCPSQ" is displayed, press "C" followed by "Enter."
3. Scan your chemical test operator card and enter the requested information.
4. Run the test sequence.
5. The Form 120-G should be completed during the test.
6. Sign the test record after it is printed.
7. In "Remarks", label this an "ACA Test."

- **Test A:**

Mode: ND Custom Mode Sequence (**Adequate ST 1 and ST 2**)

Note: This allows the operator to understand a good breath sample. The operator should act as the subject. This test demonstrates that a breath with no alcohol gives an alcohol concentration of "0.000."

1. ST 1 – Blow your breath through a mouthpiece to provide an adequate sample.
2. CS – Automatically analyzed by the Intoxilyzer® 8000.
3. ST 2 – Repeat ST 1.
4. In "Remarks", label this as "Test A."

- **Test B:**

Mode: ND Custom Mode Sequence (Adequate ST 1 and ST 2)

Note: This allows the operator to observe and record data from a valid subject test. The operator should act as the subject.

1. ST 1 – Blow through a simulator into the breath tube to provide an adequate sample.
2. CS – Automatically analyzed by Intoxilyzer® 8000.
3. ST 2 – Repeat ST 1.
4. In “Remarks”, label this as “Test B.”

- **Test C:**

Mode: ND Custom Mode Sequence (Deficient Sample for ST 2)

Note: This demonstrates a test when the subject gives up or cannot blow a second sample.

1. ST 1 – Blow an adequate sample into the breath tube.
2. CS – Automatically analyzed by Intoxilyzer® 8000.
3. 3.ST 2 – Blow a deficient sample of test solution into the breath tube. Just blow a sample until the numbers start appearing on the display.
4. In “Remarks”, label this as “Test C.”

- **Test D:**

Mode: ND Custom Mode Sequence (No Second Sample; Subject Refusal)

Note: This simulates a subject refusing a second sample. This is a valid test and the first subject sample will be the recorded alcohol concentration and time. The operator must offer the second sample and allow the time to run out to comply with the *Approved Method*. When testing a DUI subject, use two (2) clean mouthpieces as indicated in the *Approved Method*. The designation for "Deficient Sample" is the asterisk (*) on the test record. Compare the alcohol concentration (AC) results of this test to those of "Test C."

1. ST 1 – Blow an adequate sample into the breath tube.
2. CS – Automatically analyzed by Intoxilyzer® 8000.
3. ST 2 – Do not blow a sample. Wait until the test record is automatically printed.
4. In "Remarks", label this as "Test D."

- **Test E:**

Mode: ND Custom Mode Sequence (Sample Introduced at Wrong Time)

Note: This test demonstrates the test results when the operator coaches the subject to blow too early or the subject starts blowing too early. Notice that "Improper Sample" is displayed. The Intoxilyzer® 8000 clears the sample chamber with another room air prior to aborting and printing the test.

1. ST 1 – Blow an adequate test solution into the breath tube.
2. CS – Automatically analyzed by Intoxilyzer® 8000.
3. ST 2 – Hook up the simulator as soon as "Room Air" "Rslt:0.000" is displayed. Blow through the simulator as soon as "Reference" is displayed and while the boxes are moving across screen.
4. In "Remarks", label this as "Test E."

- **Test F:**

Mode: ND Custom Mode Sequence (Double Refusal)

Note: This simulates a subject refusing the breath sample. This indicates the operator allowed the subject to try twice, for “three minutes” each time. By allowing the time to run out each time, you are following the *Approved Method*. This is considered a valid test because all the steps of the *Approved Method* were followed. No alcohol concentration is recorded. When testing a DUI subject, use two (2) clean mouthpieces as indicated in the *Approved Method*.

1. ST 1 – Do not blow a sample. Wait.
2. CS – Automatically analyzed by Intoxilyzer® 8000.
3. ST 2 – Do not blow a sample. Wait.
4. In “Remarks”, label this as “Test F.”

- **Test G:**

Mode: ND Custom Mode Sequence (Refusal; Stop Test)

Note: This indicates how you, as an operator, can abort the breath test. This is **not** considered a valid test although it may be used as evidence. Indicate the reason for aborting the test in your report. Describe the actions of the subject that led you to this action.

1. ST 1 – Depress the “R” key on the keyboard.
2. “Subject Test Refused” will be displayed.
3. In “Remarks”, label this as “Test G.”

- **Test H:**

Mode: ND Custom Mode Sequence (Diabetic Subject in Ketosis)

Note: This simulates what a diabetic in ketosis may display. **You should get medical attention for this subject.** Physical actions of the subject may be similar to those of an inebriated person. Follow your agency policy manual concerning medical attention. Write "Subject Was Taken for Medical Attention" on the test record and get a blood or urine specimen as evidence for the DUI.

1. **Use the Simulator labeled: Acetone.**
2. ST 1 – Blow sample of acetone solution into the breath tube.
3. "Interferent Detect" will be displayed.
4. Keep the test record copies as evidence.
5. In "Remarks", label this test "Test H."

- **Test I:**

Mode: ND Custom Mode Sequence (Diabetic Subject With 0.10 and in Ketosis)

Note: This simulates what a diabetic with a 0.10 AC in ketosis would display. **You should get medical attention for this subject.** Follow your agency policy manual concerning medical attention. You will not be able to tell if the subject has alcohol in addition to acetone on his breath. Write "Subject Was Taken for Medical Attention" on the test record and get a blood or urine specimen as evidence for the DUI.

1. **Use the Simulator labeled: Ethanol and Acetone or 0.10 AC plus Acetone**.
2. ST 1 – Blow an adequate sample of 0.10 AC EtOH and acetone into the breath tube.
3. "Interferent Detect" will be displayed.
4. Keep the test record copies as evidence.
5. In "Remarks", label this as "Test I."

- **Test J:**

Mode: ND Custom Mode Sequence (Subject With 0.10 Percent Methanol)

Note: This simulates 0.10 percent methanol. **You should get medical attention for this subject.** Physical actions of the subject may be more exaggerated than those of a person having a 0.10 breath ethyl alcohol concentration. Follow your agency policy manual concerning medical attention. Write "Subject Was Taken for Medical Attention" on the test record and get a blood or urine specimen as evidence for the DUI.

1. **Use the Simulator labeled: Methanol.**
2. ST 1 – Blow an adequate sample of 0.10 percent MeOH (methanol).
3. "Interferent Detected" will be displayed.
4. Keep the test record copies as evidence.
5. In "Remarks", label this as "Test J."

- **Test K:**

Mode: ND Custom Mode Sequence (Subject With 0.10 Percent Isopropanol)

Note: This simulates a person with 0.10 percent isopropanol. **You should get medical attention for this subject.** Follow your agency policy manual concerning medical attention. Write "Subject Was Taken for Medical Attention" on the test record and get a blood or urine specimen as evidence for the DUI.

1. **Use the Simulator labeled: Isopropanol.**
2. ST 1 – Blow an adequate sample of 0.10 percent Isopropanol.
3. "Interferent Detected" will be displayed.
4. Keep the test record copies as evidence.
5. In "Remarks", label this as "Test K."

- **Test L:**

Mode: ABA (MIC; Minor in Consumption)

Note: This simulates a test run on a person consuming alcohol under the legal age. An S-D5 test will suffice in most jurisdictions. Check with your local policies to see what is required. There is no Implied Consent with MIC cases; the subject may refuse. No Report and Notice will be filed.

1. ST 1 – Blow an adequate sample into the breath tube.
2. In “Remarks”, label this as “Test L.”

- **Print Test:**

Mode: P (Checks Printer and Setup)

Note: This test checks the printer and setup of the Intoxilyzer® 8000.

1. Press “ESC” “ESC” followed by “Enter.”
2. When “1| BCPSQ” is displayed, press “P” followed by “Enter.”
3. Follow the display instructions. Sign the test record after it is printed.
4. In “Remarks”, label this as “Print Test.”