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Georgia Bureau of Investigation
Division of forensic sciences

2017 Revision

Intoxilyzer 9000
Georgia operator's training manual

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WHILE THE ADMINISTRATIVE, PROCEDURAL, AND CLERICAL STEPS DESCRIBED IN THIS MANUAL ARE INTENDED TO BE USED TO ASSIST IN TRAINING OPERATORS IN THE BEST PRACTICES FOR BREATH ALCOHOL TESTING, THIS MANUAL SHOULD NOT BE CONSTRUED AS THE OFFICIAL METHOD FOR BREATH ALCOHOL TESTING WHICH CAN BE FOUND IN GBI RULE 92-3

PURSUANT TO O.C.G.A. 40-6-392 THE GEORGIA BUREAU OF INVESTIGATION PROMULGATES OFFICIAL METHODS FOR CHEMICAL TESTING OF ALCOHOL IN BREATH. THESE METHODS CAN BE FOUND ON FILE AT THE OFFICE OF THE SECRETARY OF STATE, RULES OF THE GEORGIA BUREAU OF INVESTIGATION 92-3.

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Note on the 2017 revision: The intent of the 2017 revision to the Intoxilyzer 9000 Georgia Operator's Refresher Training manual is to update operators on relevant legal, administrative, and operational issues potentially affecting evidential breath alcohol testing in the state of Georgia. It should be cautioned however, that the Intoxilyzer 9000 Georgia Operator's Refresher Training Manual is intended to be a training supplement and should not be construed as an establishment of official testing methods as described in the Official Code of Georgia Annotated which can be found in GBI Rule 92-3.

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INTRODUCTION

Since the dawn of the automotive age alcohol consumption has been inextricably linked to public safety. As early as 1904, investigators started to notice a growing link between the consumption of alcoholic beverages and motor vehicle involved fatalities. In the ensuing years, scientific research was successful in determining a direct correlation between a motorist's alcohol level and their risk of motor vehicle fatality. This ultimately culminated in the establishment of the first DUI legislation that directly defined permissible alcohol levels in the driving public in 1939. Once established, this legislation created a new challenge for law enforcement officers seeking to enforce it. Due to the fleeting nature of alcohol in the human body, the obtaining of search warrants for the timely collection of specimen became a limiting factor in the enforcement of DUI laws. To resolve this problem New York state passed the first Implied Consent law in 1953. This Implied Consent law conditionally granted driving privileges to the motoring public in exchange for implied consent to test their blood, breath, or urine for alcohol if probable cause existed to believe they were DUI.

In order to protect the motoring and boating public Georgia has passed its own DUI and Implied Consent laws that can be found in Titles 40 and 52 of the Official Code of Georgia Annotated (O.C.G.A.). Some of the laws directly pertaining to DUI are as follows:

O.C.G.A 40-5-55: Georgia's Implied Consent Law

This law states that any person who operates a motor vehicle on the roads of Georgia and is arrested for the offense of DUI shall be deemed to have given consent to chemical testing. in order to determine if they are driving under the influence.

O.C.G.A 40-5-67.1: Georgia's Implied Consent Notice.

This law defines the warning read to motorists arrested for DUI informing them of the Implied Consent Law.

O.C.G.A 40-6-391: Georgia's DUI Statute.

This law defines driving under the influence in Georgia.

O.C.G.A 40-6-392: Chemical Testing Statute.

This law defines the requirements for chemical tests performed in conjunction with the Implied Consent and DUI statute.

O.C.G.A 40-1-1: Title 40 Definitions.

This statute defines alcohol concentration in terms of blood and breath pursuant to chemical testing.

O.C.G.A 52-7-12: Georgia's Boating Under the Influence Statute.

This statute defines both boating under the influence and the requirements for chemical testing of individuals suspected of BUI.

Under O.C.G.A. 40-6-392 the legislature has established the methods by which these chemical tests requested as part of a DUI arrest must be performed. This statute requires that the Georgia Bureau of Investigation:

- Approve satisfactory techniques and methods to ascertain the qualifications and competence of individuals to conduct analyses
- Issue permits to conduct analyses
- Issue requirements for properly operating and maintaining testing instruments.
- Issue certificates that instruments have met the approval requirements of DOFS.

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In conjunction with this authority and obligation, the GBI-DOFS adopted the Rules and Regulations governing Implied Consent - GBI Rules 92-3 (Appendix A). In accordance with this authority, the Director of DOFS has approved breath alcohol testing as an acceptable procedure for alcohol analysis when performed by a certified operator on an approved breath testing instrument.

Pursuant to GBI Rule 92-3:

> (12)(a) The methods approved by the Division of Forensic Sciences for conducting an evidential breath alcohol analysis shall consist of the following:
>
> > (1) the analysis shall be conducted **on an approved instrument** as defined in 92-3-.06 (5).
> >
> > (2) the analysis shall be performed **by an individual holding a valid permit**, in accordance with Rule 92-3-.02 (2); and
> >
> > (3) the testing **instrument shall have been checked periodically for calibration and operation**, in accordance with Rule 92-3-.06 (8)(a);

In 2013 modifications to GBI Rules 92-3 were adopted to allow the use of the Intoxilyzer 9000 as an approved instrument for evidential breath testing. Thus the Intoxilyzer is now the sole approved instrument for evidential breath alcohol testing in the state of Georgia.

Pursuant to GBI Rule 92-3-.06:

> (5) Breath tests other than the original alcohol-screening test shall be conducted on a breath alcohol analyzer approved by the Director of the Division of Forensic Sciences or his or her designee. Any other type of breath alcohol analyzer not specifically listed in this paragraph must be approved by the Director of the Division of Forensic Sciences or designee prior to its use in the State.
>
> > (a) **The Intoxilyzer Model 5000 manufactured by CMI, Inc. is an approved instrument for breath alcohol tests conducted on or before December 31, 2015;**
> >
> > (b) **The Intoxilyzer Model 9000 manufactured by CMI, Inc. is an approved instrument for breath alcohol tests conducted on or after January 1, 2013;**

In contrast the GBI has approved a variety of portable breath testing devices for alcohol screening of DUI suspects. Please see the Useful Links and Documents section of this manual for further details.

CMI Inc.

INTOXILYZER® 9000

LEGAL FOUNDATIONS FOR CHEMICAL TESTING

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In order to obtain a chemical test result that will be useful in adjudicating DUI cases, law enforcement officers should be careful to consider several foundational principles when making decisions regarding events leading up to the chemical test. This will ensure that the arresting officer will properly meet both the legal and scientific criterion necessary for an admissible breath test. While the circumstances surrounding a DUI arrest may vary, the following sections outline several key concepts that should be carefully considered by law enforcement officers when determining the best course of action.

Driving Under the Influence (DUI)

The majority of chemical tests requested by an officer will arise out of a violation of O.C.G.A. 40-6-391, commonly known as the DUI statute. A close reading of this statute reveals that there are nine different ways that a motorist can be found to be "driving under the influence" under Georgia law.

Defining DUI: O.C.G.A 40-6-391				
DUI Less Safe		**DUI Per Se Alcohol (concentration defined as DUI)**		Other
(a)(1) Alcohol	(a)(3) Inhalants	(a)(5) 21 & older **(0.08 or greater)**	(k)(1) Under 21 **(0.02 or greater)**	(i) Child Endangerment
(a)(2) Drugs	(a)(4) Combination	(i) Commercial MV **(0.04 or greater)**		(a)(6) Per Se Drugs

Before a motorist can be arrested for a DUI, an officer must perform an investigation to determine whether or not probable cause exists to believe that motorist is in violation of O.C.G.A. 40-6-391. Most DUI investigations consist of three phases:

1. Vehicle In Motion: The officer must decide whether or not to stop the vehicle.
2. Personal Contact: The officer must decide whether or not to detain the subject and have them exit the vehicle.
3. Pre-arrest Screening: The officer must decide whether or not sufficient probable cause exists to arrest the subject for DUI.

Vehicle in Motion / Stopping the Vehicle

It must be understood that when a officer requests a driver to bring his or her vehicle to a stop, they are effectively seizing the vehicle and its contents. Because the U.S. Constitution protects the citizens against unreasonable searches and seizures, **the officer must have reasonable articulable suspicion of possible criminal activity to stop a vehicle and briefly detain its occupants** . (*Arizona v Johnson 555 US 323,327 (2009), Chandler v Miller 520 US 305,308 (1997) Ivey v State 310 Ga App 796 (2009))*

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Reasonable articulable suspicion can be defined as, **specific, articulable facts sufficient to give rise to a reasonable suspicion of criminal conduct** . This suspicion should be based on the totality of the circumstances and could include: objective observations of the officer, known patters of certain kinds of law breakers, and/or inferences drawn and deductions made by trained law enforcement personnel. In DUI related cases articulable suspicion for a stop is typically developed through:

1. Observation of a traffic violation.
2. The collective knowledge of the police. (e.g. Information relayed to a officer regarding a motorist's behavior –*State v Pernnyman 248 Ga App 446 (2001))*
3. Any actions that give rise to a reasonable belief that the suspect is violating the law, even if the officer does not directly observe a violation occurring. (e.g. weaving within the lane—*Waldron v State 321 Ga App 246 (2013)*)

It should be noted that the articulable suspicion for the stop does not have to be directly related to a DUI offense, but the officer only needs to establish individualized suspicion of a crime. (*Clark v State 243 Ga App 362*)

Personal Contact / Detention

Law enforcement officers may detain persons suspected of a crime for a brief period of time for the specific purpose of investigating their suspicions that a crime has been committed. During this time an officer may ask the detainee a modest number of questions to determine their identity and to try to obtain evidence confirming or dispelling the officer's suspicions. During this time officers may ask the suspect to exit the vehicle and participate in pre-arrest screening activities to determine whether probable cause to arrest the subject exists.

Pre-arrest Screening

In order to arrest a subject for DUI, the officer must have **probable cause** to believe the driver is in violation of OCGA 40-6-391. The test for probable cause requires merely a probability that a crime has been committed, less than a certainty, but more than a suspicion. This means to arrest a suspect for DUI, an officer needs to have knowledge or reasonably trustworthy information sufficient to authorize a prudent person to believe that the suspect was actually in physical control of a moving vehicle while under the influence of alcohol to a degree which renders him incapable of driving safely. (*Slayton v State 281 Ga App 650 (2006), Jaffray v State 306 Ga App 469,473(2010)*)

In order to determine whether probable cause exists, officers should be carefully assess the subject for signs and symptoms of impairment and may employee the use of investigatory tools such field sobriety tests and portable breath testers (PBTs). (Note: PBT results may only be used to legally establish the presence or absence of alcohol, not the subject's exact breath alcohol concentration.) A detainee's participation in questioning or field sobriety tests is voluntary and failure to participate in these activities cannot form the sole basis for arresting the subject. Unless the detainee's actions or answers give the officer **probable cause** to believe a crime has been committed, absent other evidence, the subject must be released. It should be noted that the officer **does not** have to advise the driver of their **Miranda rights** when questioning a detained motorist prior to the point of arrest. (*State v O'Donnell 225 Ga App 502 (1997)*)The driver's pre-arrest statements and actions are admissible against them in any criminal proceedings.

Common Tools For Evaluating Probable Cause			
Manner of Driving	Manner of Exit	Timeframe of Drinking	Condition of Eyes
Traffic Violations	Demeanor	Appearance of Driver	Speech
Manner of Stop	Odor of Alcohol	Driver's Attire	Other Observations
Vehicle Condition	Admission to Drinking	Physical Manifestations	FSTs / PBT results

Arrest

Once the investigation is complete, the officer needs to decided whether or not to arrest the subject. The arrest is effectuated when the officer makes an **overt action** to indicate that brief detention has become a formal arrest or the subject is "in custody". If a motorist who has been detained in a traffic stop is subject to treatment that renders him **"in custody",** you **must advise** him of his Miranda rights in order for his post-arrest statements or post arrest field sobriety evaluations to be admissible as evidence in a criminal proceeding. The test for determining whether or not a subject is under arrest **is whether or not a reasonable person in the suspect's position would have thought that the detention would not be temporary**. (*Crider v State 319 Ga App 567 (2013)*) Thus, treatment of a motorist at the scene of the stop may be considered equivalent to a formal arrest when:

1. The subject is verbally or physically restrained in a way that communicates that he or she is not free to leave. (Note: Whether of not the officer would have permitted the subject to leave doesn't determine arrest.)
2. The driver is detained for over one-half hour, absent exigent circumstances.
3. Part of the detention is spent in the patrol car (for reasons other than safety, weather, etc.).
4. The officer persistently questions the driver in a patrol car, resulting in a confession or other incriminating circumstances.
5. The driver is a minor and is denied permission to contact his or her parents or guardian.
6. The officer tells the subject they are under arrest or issues them a citation. (See *OCGA 17-4-23*)

Once the arrest is made, the officer will likely be required to testify about:

1. The basis of the arrest.
2. The circumstances of the arrest.
3. How the officer told the driver of the arrest and the charges.
4. How and when the officer read the driver the Implied Consent Warning.
5. What statements the driver made to the officer.
6. What statements the officer made to the driver.
7. Whether the subject voluntarily consented to the chemical test.

The Implied Consent and Chemical Testing Statutes

Once an arrest is made pursuant to a violation of OCGA 40-6-391 several other statutes begin to impact the officer's course of action.

O.C.G.A 40-5-55: Georgia's Implied Consent Law

- Implies that motorists in Georgia have given voluntary consent for chemical testing.
- Allows law enforcement to request that consent from motorists where probable cause to arrest for DUI exists.

O.C.G.A 40-5-67.1: Georgia's Implied Consent Notice.

- Establishes the language of the Implied Consent Warning / Request. (Printed on *DDS 354*)
- Allows for the use of search warrants if consent is not granted. (d1)
- Sets up the process for Administrative License Suspension (ALS).

O.C.G.A 40-6-392: Chemical Testing Statute.

- Allows for chemical testing of motorists.
- Provides the methods by which chemical tests must be performed
- Establishes legal presumptions of DUI with regard to chemical test results.
- Sets the framework for the admissibility of chemical test results at trial.

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Obtaining Consent

If the officer chooses to pursue a chemical test, they must obtain a sample of the subject's blood, urine, or breath. It should be noted that this is considered a search under both the United States and Georgia Constitutions. The courts have held that in order for the product of this search to be admissible, at least one of the following conditions must be met:

1. A **valid search warrant** must be obtained.
2. **Exigent circumstances** must be established. In DUI cases this is typically done by establishing that if the officer had taken time to obtain a warrant, the level of alcohol or drugs in the subject would have declined to an extent that they could no longer meaningfully prove an essential element of the crime. Though the "fleeting nature of alcohol" is generally recognized by the court, exigent circumstances is always evaluated on a case by case basis. (*See US Supreme Court No 11-1425 Missouri v McNeely*)
3. **Voluntary consent** must be obtained from the subject. The tool that should be used to secure voluntary consent in most cases in the **Implied Consent** warning found in OCGA 40-5-67.1. This being said, the court has distinguished voluntary consent from implied consent. (*See Ga Supreme S14A1625 Williams v State*).

Guidelines for Obtaining a Chemical Test Under Implied Consent

If the officer chooses to request that the subject voluntarily consent to a chemical test, **they must read the appropriate Implied Consent Warning to the subject**. In order for this request to be considered valid, the warning must be read:

1. After the point of arrest. (*Hough v State S05G0311 and Handschuh v State S06G0640*)
2. As close to the point of arrest as possible. (*Perano v State 250 Ga 704, 708 (1983)*)
3. Without alteration to the substantial meaning of the warning. (*Harrison v State 235 Ga App 78 (1998)*)
4. In English (*Furcal-Peguero v State 255 Ga App 729, 733 (2002)*) (Note: Pursuant to OCGA 24-6-653 a reasonable attempt must be made to provide a translator for hearing impaired subjects)
5. Must result in the **voluntary consent** of the suspect or must be considered a **refusal.**

Note: This means that samples taken from subjects that are unconscious or rendered otherwise incapable of giving voluntary consent must be done through the use of a warrant or establishment of exigent circumstances. (*Ga App. A16A0200 Bailey vs State*)

4. In 2016 the US Supreme court defined a third condition under which a warrantless search of the breath could be conducted. In a ruling called Birchfield v North Dakota (*14-1468*) the court basically opined that breath testing could be universally performed without a warrant as a search incident to a lawful arrest. This exception applies only to breath and not to blood tests. Despite this ruling, the reading of Implied Consent warning, even in cases of breath testing, is still advised.

The Implied Consent card directly quotes Georgia's Implied Consent law and differs for subjects 21 and older, commercial motor vehicle operators, and subjects under age 21. The arresting officer must read the correct Implied Consent warning to the driver **at the time of the arrest**, not later, **unless exigent circumstances warrant a delay**. It is advisable to bring a copy of the Implied Consent Warning to the hearing or trial when testifying that you advised driver of these rights. Do not attempt to advise the driver or testify from memory. Be sure to request that the driver submits to the test or tests you designate and be sure to articulate the manner in which the subject consented. If voluntary consent to submit to the chemical test can not be clearly established, the subject should be considered to have refused testing.

After reading the Implied Consent Warning, if the driver requests an attorney, clearly inform the arrestee that they **do not** have the right to speak to an attorney when deciding whether to submit to a chemical test. (*Rackoff v State 281 Ga App 306 (2006)*) After the driver submits to the designated tests, the officer is **required** to make **a reasonable attempt to accommodate** any request made by the driver for an **independent test**. It is the responsibility of the driver to pay and make arrangements to have the independent test samples analyzed.

Refusals

The Implied Consent warning affords the arrested driver the opportunity to refuse voluntary submission to chemical testing; however, this does not preclude the officer from ultimately obtaining a search warrant. In the event of a refusal, the officer must send a notice to suspend the driver's license within **ten days** of arrest to the Department of Driver's Services. (See DS Form 1205) The suspended driver may then request an administrative or OSAH hearing to determine whether sufficient grounds existed for the license suspension. Pursuant to OCGA 40-5-67.1 (g)(2) the scope of this hearing should be limited to:

1. Whether the officer had probable cause to believe the defendant was in violation of OCGA 40-6-391.

2. Whether the officer properly advised the defendant of their rights by reading the appropriate Implied Consent notice.

3. Whether the defendant refused the test **OR**

3. Whether the test showed an unlawful drug or alcohol concentration **AND** whether the test was administered by a person possessing a valid permit on an instrument approved by the GBI with all of its parts attached and in good working order as prescribed by the manufacturer.

Any subject who does not voluntarily consent to chemical testing pursuant to the reading of the Implied Consent Warning is deemed to have refused testing. This refusal can be entered as evidence against the defendant at trial and creates a legal inference that the tests would have shown the presence of drugs or alcohol. This along with other evidence can be used to establish circumstantial evidence of intoxication. It should be noted that some subjects will deliberately refuse the chemical test without any verbal indication of their intention to refuse. The following are some examples on non-verbal refusals:

1. Silence in the face of a request. (*Miles v State 236 Ga App 632 (1999)*)
2. Repeated demands for an attorney (*Fairbanks v State 244 Ga App 123 (2000)*)
3. Faking a sample / Intentionally providing an Insufficient Sample (*Hunt v State 247 GA App 464 (2000)*)
4. Dilatory Tactics (*Miles v Smith 239 Ga App 641 (1999)*)

Georgia law requires that the driver be advised of his Implied Consent rights on the scene of the arrest. If the driver refuses the tests, you may not administer a chemical test to the subject unless the subject first withdraws their refusal or a warrant is obtained. Georgia courts have ruled the driver has the right rescind a refusal and take the test with no penalty under some circumstances (Howell v. State, 266 Ga App 480 and Dept. of Public Safety v. Seay, 206 GA App.71). However in order for a rescission to be valid it must meet the following criteria:

1. It must be done within a short an reasonable time.
2. The test must still be accurate.
3. The testing equipment must still be readily available.
4. It must not result in a substantial inconvenience or expense to the police.
5. The subject must be in the custody of the arresting officer and under observation the entire time since arrest.

Law enforcement personnel may ask a subject who refuses a chemical test if they would like to withdraw their refusal, but must be careful not to coerce the subject. As of 2006, OCGA 40-5-67.1 (d.1) allows for the obtaining of samples for chemical testing from a refusing subject by means of a properly executed search warrant.

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Independent Tests

When the driver agrees to the requested test, the Implied Consent Law entitles the subject to request an **independent chemical test from qualified personnel of their own choosing and at their own expense, after they have submitted to the state's test**. This **does not** mean that the arresting officer must personally guarantee that the independent test is obtained, but they **must make a reasonable attempt to accommodate any reasonable request for independent testing by the subject**. In the event that an independent test request from a subject seems unreasonable, the officer should make every effort to come to a mutually agreeable resolution with the subject; however, if one can not be obtained, the court does not require officers to honor unreasonable requests. In determining whether a request for independent testing is reasonable the officer should weigh the following factors. (*Ritter v State 306 Ga App 689,690 (2010)*):

1. The availability of or access to funds to pay for the test.
2. A protracted delay in giving the test if the officer complies with the suspect.
3. The availability of police time and other resources.
4. The location of the requested facilities.
5. The opportunity and ability of the accused to make arrangements personally for testing.

Submission to the Tests

When the driver agrees to the requested test, the Implied Consent Law requires the chemical test to be administered under the **direction** of the **Arresting Officer**. This **does not** mean that the arresting officer must personally administer the tests or even observe the entire process. The test(s) can be performed by a certified Intoxilyzer™ 9000 operator or by other qualified personnel in the case of blood and/or urine. The arresting officer **should** however be able to testify from first hand knowledge that the requirements for an admissible chemical test were fulfilled or the test result may not be admissible. The requirements for admissibility of a chemical test of a defendant's breath are found in OCGA 40-6-392 and GBI Rule 92-3 and state that the test must be performed:

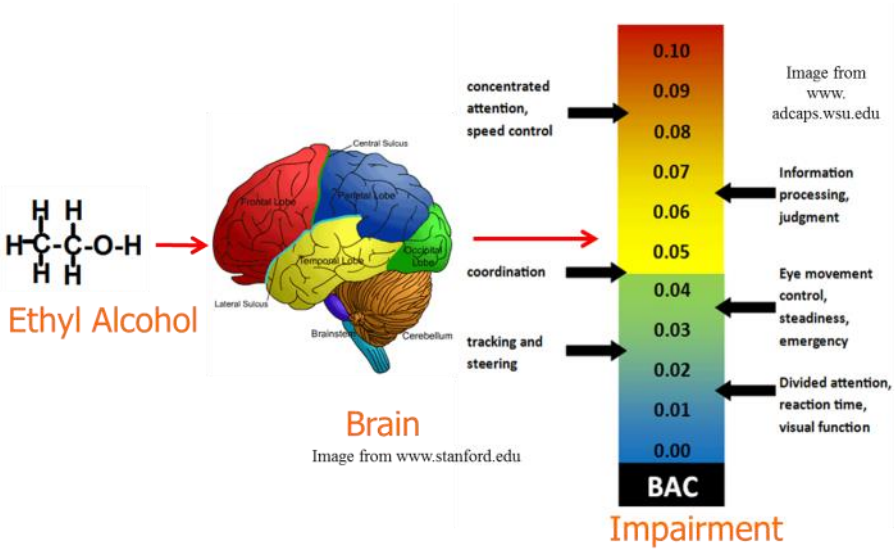
Element	Citation	Met by
By someone possessing a valid permit	GBI Rule 92-3.06(12)(a)(2)	Introduction of Operator's permit
On an instrument approved by the GBI	GBI Rule 92-3.06(12)(a)(1)	GBI Rule 92-3.06(5)(b) Installation letter (usually not necessary)
On an instrument with all of its parts attached and in good working order as prescribed by the manufacturer	OCGA 40-6-392(a)(1)(A)	Operator's testimony Instrument diagnostics Dry gas calibration check Quarterly Inspection
On an instrument receiving a valid periodic inspection	GBI Rule 92-3.06(12)(a)(3)	Introduction of the most recent Certificate of Inspection issued prior to the subject's test.

ALCOHOL TOXICOLOGY: WHAT DOES IT MEAN TO BE UNDER THE INLFUENCE?

The term "driving under the influence" or DUI is generally used to describe the various violations of the law detailed in OCGA 40-6-391. This means that a motorist must not operate a motor vehicle while under the influence of alcohol, drugs, or inhalants to the extent that concentration of that substance in the body exceeds a pre-defined level (per se) or it renders them less safe to drive (less safe). Thus, in order to enforce the DUI statue officers need a way to determine the level or alcohol in the body and whether or not a motorist's driving ability has been **impaired** by alcohol.

How does alcohol cause impairment?

Alcohol acts as a **depressant** in all individuals, and if consumed in sufficient quantity will lead to impairment of various physiological and cognitive functions. It primarily mediates its intoxicating effects by interfering with chemical messengers in the nervous system known as **neurotransmitters**. By interfering with neurotransmitters alcohol slows, inhibits, and depresses the efficient transmission of nerve impulses in the nervous system which ultimately interferes with the brain's ability to effectively send and receive information. This is what we recognize in an individual as intoxication or impairment. In this context, **impairment** is simply a diminished ability to perform a particular task resulting from depression of the nervous system by alcohol. If the impaired task is one necessary for safe operation of a motor vehicle, then alcohol has impaired driving ability. Any effect of alcohol that causes a person to operate a motor vehicle less safely than they normally would is by definition **driving impairment**. Between the limits of sobriety and lethality, it is logical to conclude that there exists some threshold level at which all individuals, even those habituated or highly tolerant to alcohol, will show detectable and measurable **impairment** in their ability to operate a motor vehicle safely.



How is impairment related to alcohol level?

It has been long understood that there is a direct relationship between the level or concentration of alcohol in a subject and the degree of impairment it produces. Thus, **a subject's blood or breath alcohol level is directly related to the degree of impairment they are experiencing**. If significant impairment exists, signs or symptoms of impairment can frequently be observed in the driving or physical manifestations that a subject will typically display while under controlled observation and testing. It should be understood that because different cognitive and psychomotor functions have different sensitivity to alcohol, a subject who is able to perform one task well, may be significantly impaired with respect to another. This means that **impairment is dependent upon both the level of alcohol in the subject and the task in question**. Due to this fact, different alcohol levels are frequently classified as different **Stages of Intoxication** and are typically characterized by different physical manifestations.

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What are the typical manifestations of alcohol intoxication?

Stage *	BAC Range	Typical Manifestations	Possible Driving Impairment	Other Comments
Near Sobriety (Subclinical)	0.01-0.05	• Nearly normal appearance • Onset of judgment and attention impairment • Naïve task impairment	• Compensatory / Adaptive tracking and visual search impairment onset • Evasive maneuver impairment onset • Emergency braking impairment onset • Drowsiness	• The majority of driving studies show impairment at alcohol levels 0.05 or less. (Moskowitz 2000) • Drivers under age 21 show significant elevation in crash risk at BACs above 0.02. (Peck, 2007)
Euphoria	0.03-0.12	• Euphoria • Increased self confidence • Increased sociability • Decreased inhibitions • Impairment of Judgment • Impaired divided attention • Onset of balance impairment.	• Impaired depth perception • Increased risk taking • Lack of judgment • Slowed reaction time • Slowed glare recovery • Difficulty maintaining lane and speed. (divided attention)	• Approx. 95% of driving studies show impairment by the time subjects reach a BAC of 0.08. (Moskowitz 2000) • A BAC of 0.08 represents an increase in crash risk of approximately 300% (Grand Rapids Study, 1964)
Excitement	0.09-0.25	• Emotional Instability • Loss of critical thinking and judgment • Incoordination • Inertia/ Lack of balance • Slurred speech	• Difficulty accelerating smoothly • Braking errors • Signal/ control errors • Difficulty steering / curve taking	• 0.12-0.16 is the average BAC in DUI related fatalities. • 99% of driving studies show impairment at alcohol levels 0.09 or less. • A BAC of 0.14 represents an increase in crash risk of approximately 2000% (Grand Rapids Study, 1964)

Note: Manifestations such as the odor of an alcoholic beverage, flushed appearance, and bloodshot/watery eyes may be an indication of drinking , but they are not highly correlated with a particular level of alcohol.

Stage*	BAC Range	Typical Manifestations	Possible Driving Impairment	Other Comments
Confusion	0.18-0.30	• Disorientation and mental confusion • Gross incoordination • Slurred Speech • Staggering gait • Vomiting	• Numerous Effects • Driving off roadway • Driving wrong direction • Improper lane usage	• Increase in crash risk at 0.17 is 4,500%, and goes up exponentially. (Grand Rapids Study, 1964)
Stupor	0.25-0.40	• Apathy / Lack of muscle control • Inability to stand or walk • Loss of consciousness or memory • Loss of bladder control • Coma / Death	• Numerous Effects • Passing out behind the wheel	
Coma/Death	>0.40	• Coma/Death		

*Work partially adapted from Kurt Dubowski's :"Stages of Acute Alcoholic Influence and Intoxication", 1989.

Does everyone show the same manifestations at the same alcohol levels?

It should be noted that the degree to which certain impairing effects may be present at a particular alcohol concentration may vary from person to person based on an individual's **tolerance** to alcohol. **Tolerance** is the body's attempt to diminish or adapt to the frequent presence of large doses of alcohol by reducing or compensating for alcohol's impairing effects. While the body can exhibit some tolerance to alcohol through physiological changes such as increasing the elimination rate or desensitizing the nervous system, the most common form of tolerance to alcohol is a **learned or task dependent behavioral tolerance**. It is well known that if simple tasks are practiced repetitively while under the influence of alcohol, a tolerance with respect to those tasks can be developed. Thus, people who regularly consume large doses of alcohol may show some **learned tolerance** to many of alcohol's impairing effects on simple tasks and may exhibit a relatively normal outward appearance at high alcohol levels. Unfortunately little to no tolerance is observed at significant alcohol levels with relation to many of the complex cognitive functions required for driving.

Tasks where Tolerance is Pronounced at Levels Greater than 0.08
Simple / Well Learned Tasks
Walking
Talking
Simple Motor Tasks
Simple Cognitive Tasks

Tasks where Tolerance has Little Effect at levels Greater than 0.08
Complex / Naïve Tasks
Judgment
Choice Reaction Time
Complex Divided Attention Skills

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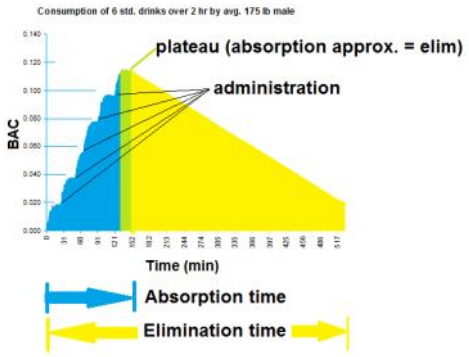
ALCOHOL PHARMACOKINETICS: WHAT AFFECTS THE LEVEL OF ALCOHOL IN THE BLOOD?

When discussing the disposition of alcohol in the human body we must be aware that the alcohol concentration in an individual is dynamic or constantly changing. At any given time the alcohol concentration in a drinking individual is affected by four primary biological processes:

1. **Administration**—Getting alcohol into the body.
2. **Absorption**— Getting alcohol into the bloodstream.
3. **Distribution -** Spreading alcohol out within the body.
4. **Elimination**. - Getting alcohol out of the body.



Administration (Getting Alcohol into the Body)

Whenever an officer encounters a motorist suspected to be under the influence of alcohol the most common question that arises is how much the driver "had to drink." While the amount of alcohol consumed is clearly related to alcohol level, there are several other factors regarding administration of alcohol that should be considered:

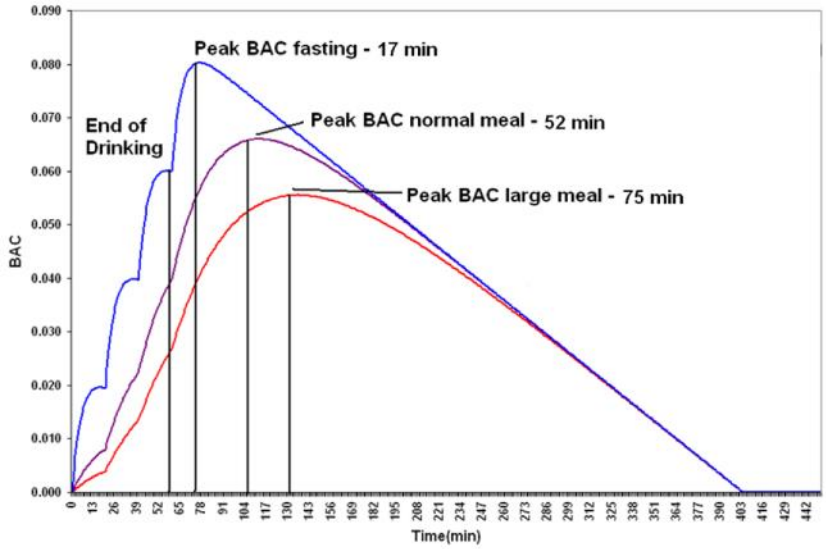
- **Amount** of alcohol consumed. Remember that beverage sizes vary. A beer is typically 12 fluid ounces, but can come in other sizes such as 16 or 24 ounces. That being said, the size of most commercially supplied alcoholic beverages are typically adjusted to deliver roughly the same amount of alcohol. The **standard drink** typically contains about **0.6 fluid ounces** of ethyl alcohol which is roughly equivalent to the amount of alcohol in **one regular 12 floz beer, one 5 floz glass of wine, or 1.5 floz of 80 proof liquor**.
- **Type** of alcohol consumed. This is primarily due to the fact the **strength of alcoholic beverages** can vary significantly. The strength of an alcoholic beverage is typically measured in % alcohol by volume or **proof**. One half the proof value is equivalent to the % alcohol by volume for a given beverage. Typical strengths and serving sizes for alcoholic beverages are listed in the table below.
- **Frequency** of alcoholic beverage consumption. How long ago and how often the alcohol consumed.
- **Route of administration.** This may effect the fraction or the speed of alcohol delivery to the body. While oral consumption is by far the most common route of ethyl alcohol administration, alcohol can be administered by other routes such as inhalation or rectal administration.

Beverage	Avg. Alcohol Content	Typical Content Range	Sugar Source	Production Method	Std Serving size
Beer	3-6%	3-14%	Barley and Hops	Fermentation	12 floz / 5%
Wine	10-12%	7-14%	Grapes	Fermentation	5 floz / 12%
Whisky	40% / 80 proof	40-75%	Rye	Distillation	1.5 floz/ 40%
Brandy	40% / 80 proof	40-43%	Grapes	Distillation	1.5 floz / 40%
Vodka	40%/ 80 proof	40-50%	Potatoes	Distillation	1.5 floz/ 40%
Rum	40%-50%	40-95%	Sugar/Molasses	Distillation	1.5floz/40%
Tequila	40% / 80 proof	40-50%	Agave	Distillation	1.5 floz/ 40%
Gin	40%	40-50%	Juniper Berries	Distillation	1.5floz / 40%

Note: Numerous non-beverage items such as perfumes, cleaning supplies, extracts, mouthwashes, hand sanitizer and over the counter medicines can contain varying levels of ethyl alcohol.

Absorption (Getting Alcohol into the Blood)

When an individual drinks an alcoholic beverage it quickly arrives in the stomach for digestion. Before alcohol can be measured, however, it has to leave the digestive tract and be absorbed into the bloodstream. This process of moving alcohol from the digestive tract to the bloodstream is termed **absorption**. Because the intestines are far more efficient than the stomach at absorbing liquids such as alcohol, the time that it takes for alcohol to be completely absorbed into the bloodstream and for a peak alcohol concentration to be reached largely depends on how efficiently alcohol leaves the stomach and enters the intestines. This can be affected by factors, such as, type and amount of food consumed with the alcohol, the quantity and strength of alcohol consumed, and the time interval over which consumption occurs. In addition, some physiological factors such as gastric surgery, disease, and drug use can affect the speed of absorption.



Est. Time to Peak BAC vs. Stomach Condition

175 lb male - 4 std drinks over 60 min

Typical Times to Peak BAC

Fasting: approx. 30 min.

Normal Meal: approx 1hr.

Large Meal: up to 2hr

For most subjects the factor that generally has the largest effect on the rate of alcohol absorption is the amount and type of food in the stomach. On average a person consuming alcohol on an empty stomach will reach a peak alcohol concentration within approximately 30 minutes after the end of drinking; however, with a moderate amount of food present in the stomach the peak may be may not be reached until one hour after the conclusion of drinking. When a large amount of food is present in the stomach, it may take as long as two hours after alcohol consumption to reach peak alcohol concentration. In rare instances times to reach peak alcohol concentration have been reported in excess of two hours after the conclusion of drinking; however such cases are uncommon and may be the result of disease or physiological abnormality.

What is the significance of absorption with regard to chemical testing?

Because the alcohol level in a drinking subject is constantly changing, it is likely that the alcohol level of the subject at the point of arrest will differ from the alcohol level measured at the point of chemical testing. The magnitude and direction of this difference is dependent upon the absorption status of the subject and the time between the point of arrest and the time of testing.

While the vast majority of suspects in DUI related cases are post absorptive or post peak at the time of testing, there remains a possibility that the subject's alcohol level is still rising at the point of arrest.

Regardless of this possibility, Georgia law states that **a suspect is considered DUI if their alcohol level is greater than the "per se" limit within 3 hours of driving from alcohol consumed before the driving ended.** Thus, absent a long delay in administering the chemical test, the only alcohol level that should typically be considered is the one measured at the point of testing.

Absorption Status	BAC level	Alcohol in the Stomach
Absorptive	Increasing	Significant
Peak/ Plateau	Little Change	Little
Post Absorptive	Decreasing	None

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Distribution (Spreading Alcohol Out within the Body)

It is well understood that a person's blood alcohol concentration (BAC) is directly related to the amount of alcohol they consume, but it is also largely affected by how the alcohol is distributed throughout the body. In reality only a small fraction of the alcohol consumed actually remains in the bloodstream after absorption; as much as 90% of the alcohol diffuses into the tissues and other water containing spaces of the body during circulation. This "spreading out" of alcohol into the water containing spaces of the body is known as **distribution.** Thus, the **volume of distribution** or amount of water into which the alcohol is distributing, will directly impact the alcohol concentration. Ultimately the greater the volume of water in a person's body, the more dilute the alcohol will become. This being said very few things can cause rapid significant changes in the total amount of water in the body without endangering a person's health. The primary factors affecting the amount of water, and thus distribution of alcohol in a drinking subject, are the **weight** and **body fat percentage** of the subject.

What is the significance of a person's weight on alcohol concentration?

Due to the fact that most tissues in the human body are largely comprised of water, as a person's weight goes up, so does the volume of water. The larger the **volume of distribution,** the less concentrated the dose of alcohol becomes. As seen in the illustration below, this results in **a drop in the expected BAC as the subject's weight increases.**

Will two people who drink the same amount always have the same BAC if they are the same weight?

If it becomes necessary to estimate an individual's alcohol level based on their consumption of alcohol, tools such as the Widmark formula or drink charts are frequently employed. Drink charts are designed to give an estimate of a person's BAC based on their weight and the number of drinks consumed. While useful tools when properly interpreted, it must be understood that drink charts do not account for unabsorbed alcohol or alcohol that has already been eliminated from the body. In addition, the relationship between dose, weight and BAC can be significantly affected by the body fat percentage of the subject. This is due to the fact that fat contains no water into which alcohol can distribute. Thus **as body fat percentage rises, the volume of distribution goes down, and subsequently the alcohol concentration is higher.** This means that two people of the same weight who consume the same amount of alcohol may not reach the exact same BAC if their body fat percentage, and ultimately the volume of water into which they distribute that alcohol (or **volume of distribution),** differs.

How does gender affect alcohol concentration?

It is apparent that certain physiological characteristics can vary not only from person to person, but also between genders. This is true of body fat percentages. The average body fat percentage for males has been estimated to be about 14-18%, while the average body fat percentage for females is closer to 23-29%. Thus, as discussed above, we would typically expect women to exhibit lower volumes of distribution (Vd) than men of the same weight. Because women typically have lower volumes of distribution, as seen below, they will exhibit higher alcohol concentrations than a man of the same weight if given the same amount of alcohol under the same conditions.

	3 drinks		4 drinks		5 drinks	
Weight (lb)	Male	Female	Male	Female	Male	Female
100	0.132	0.154	0.176	0.206	0.220	0.257
110	0.120	0.140	0.160	0.187	0.200	0.234
120	0.110	0.128	0.147	0.171	0.184	0.214
130	0.102	0.119	0.136	0.158	0.169	0.198
140	0.094	0.110	0.126	0.147	0.157	0.184
150	0.088	0.103	0.117	0.137	0.147	0.171
160	0.083	0.096	0.110	0.128	0.138	0.161
170	0.078	0.091	0.104	0.121	0.130	0.151
180	0.073	0.086	0.098	0.114	0.122	0.143
190	0.070	0.081	0.093	0.108	0.116	0.135
200	0.066	0.077	0.088	0.103	0.110	0.128

Avg male = 17% body fat (Vd = 0.7L/kg)

Avg female = 29% body fat (Vd = 0.6 L/kg)

*This chart does not account for alcohol elimination or unabsorbed alcohol.

** Drink is defined as 0.6 floz of alcohol equivalent.

Elimination

Almost immediately after the consumption of alcohol, the process of removing alcohol from the body, known as **alcohol elimination,** begins. This is accomplished through both an enzymatic conversion process called metabolism and excretion of alcohol into fluids or gases leaving the body. **Metabolism** is the process by which some compounds in the body are chemically changed so that they are less toxic to the body, more useful to the body, or more easily eliminated. The majority of alcohol that is consumed is eliminated by the **liver** through metabolism by the enzyme alcohol dehydrogenase (ADH). The ADH enzyme converts ethanol to acetaldehyde, which is ultimately further converted by a series of other enzymes to carbon dioxide and water. During each pass through the liver, more alcohol is metabolized until there is no alcohol remaining in the bloodstream. Metabolism in the liver typically accounts for the elimination of **90% to 95%** of the alcohol consumed. The remaining alcohol is primarily eliminated through excretion into bodily fluids and gases such as **urine (2-5%), breath (2-5%)**, and **sweat (<1%)**. It has been established that a small amount of alcohol metabolism takes place in the stomach before it is absorbed into the bloodstream, though the exact magnitude of this metabolism in the gastric mucosa is still debated. Even if the maximum estimates are assumed, this would only amount to the elimination of about one third of a standard alcoholic beverage from the stomach over a one hour period of time.

How fast do people eliminate alcohol?

The rate of elimination tends to be fairly constant for an individual at a given time, but will vary within a narrow range for a population of subjects. Approximately 95% of the normal population have a rate of elimination that falls within the range of 0.010 to 0.025 grams per 100 ml (or dL) of blood per hour. The average rate of elimination for the population of social drinkers is conservatively about 0.015 grams per dL per hour, but because people suspected of DUI more frequently tend to be heavy drinkers than the normal population, it is not unusual for their elimination rates to be higher. Chronic heavy drinkers or alcohol abusers may exhibit elimination rates as high a two to three times that of the average social drinker due to the development of pharmacokinetic or metabolic tolerance. Unfortunately, chronic alcohol abuse over long periods of time typically results in liver damage and the development of cirrhosis of the liver. Once this occurs, it will adversely affect normal liver function and ultimately slow alcohol metabolism.

Elimination Rate Range	Where Seen	Frequency	Average Rate	Other Notes
< 0.01 g/dl/hr	People with abnormal liver function	Very Uncommon	NA	NA
0.01 – 0.025 g/dL/hr	Occasional to Social Drinkers	Approx. 95% of the population	0.015 -0.018 g/dL/hr	Avg. Rate is frequency dependent
> 0.025 g/dL/hr	Heavy/ Chronic Alcohol Abusers	Less than 5% of the population	0.023 – 0.030 g/dL/hr	Reported rates as high as 0.05 g/dL/hr

Can we use elimination rates to estimate someone's BAC at the time of driving?

Sometimes the average rate of elimination is used to estimate an alcohol level at some time interval prior to a test. This practice is known as **retrograde extrapolation**. While it is true that alcohol levels typically decline at a steady rate, proper application of retrograde extrapolation requires several assumptions to be made that may not be able to be proven. While it is safe to assume that alcohol levels go down over time if absorption is complete , typically an operator should ***not*** consider any alcohol concentration other than the test result for making a DUI accusation. In reality, simple differences in elimination rate or beta within the normal population can cause significant differences in BAC in both the absorptive and elimination phases, even when all other factors are the same. (See following graph) In addition, the elimination rate becomes non-linear at alcohol concentrations less than 0.02, making any estimations involving low alcohol concentrations significantly more difficult to perform.

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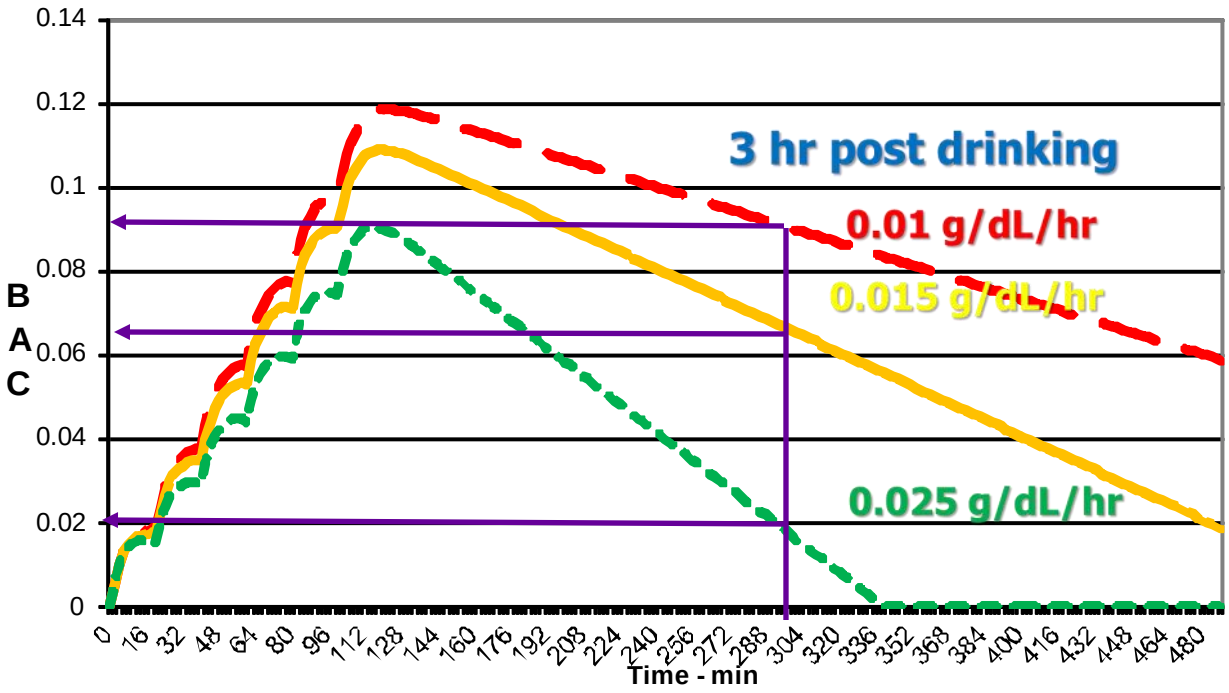
Hypothetical Model: 175 lb man consuming 6 std drinks over 2 hr.



Can we calculate a person's alcohol level if we know how much and when they consumed alcohol?

Estimates of alcohol level in an individual based on alcohol consumption, weight, volume of distribution, and elimination rate can be made using an equation known as the **Widmark formula**. While this formula can provide accurate estimates when utilized by properly trained individuals, the results are only as accurate as the assumptions underlying the calculation. In reality, as we have discussed, there are many factors related to administration, absorption, distribution, and elimination of alcohol that must be accounted for when estimating BAC.

Table of Select Factors Affecting Alcohol Level

Process	Factor	Relevant Factors	Impact
Administration	Amount	Strength of beverage	High
		Size of beverage	High
	Time of Administration		High
Absorption	Absorption Rate	Stomach Condition (empty vs full)	High
		Diet (type/amount of food consumed)	Moderate
		Diseases/ Pathologies	Varies
		Type of beverage consumed	Low
		Speed of consumption	Low
	Time Since Administration		High
Distribution	Body mass (weight)		High
	Volume of Distribution	Body fat percentage	Moderate
Elimination	Elimination Rate	Genetics and drinking frequency	High
	Time Since Administration		High

THE SCIENCE OF ANALYZING ALCOHOL IN BREATH

Respiration is the exchange of gases between an organism and its environment. In humans, respiration involves the absorption of oxygen from the environment and the elimination of carbon dioxide from the bloodstream to support life. During respiration air is taken in through the mouth or nose and transported by the trachea or windpipe into the lungs. In the lungs, the trachea branches into smaller air tubes called bronchi which continue to branch and eventually terminate in small air sacs called **alveoli.** These alveoli are surrounded by small blood vessels called capillaries which are largely permeable to gases. Thus, it is in these pulmonary alveoli that the body is able, by diffusion, to facilitate the exchange of gases between the blood and the breath. If alcohol is present in the blood, it too will diffuse across the **alveolar membrane** into the breath in a fixed proportion to the alveolar blood alcohol concentration and the core body temperature.

Alcohol in the Lungs

Alcohol vapor partitions between the blood and the breath in the pulmonary alveoli.

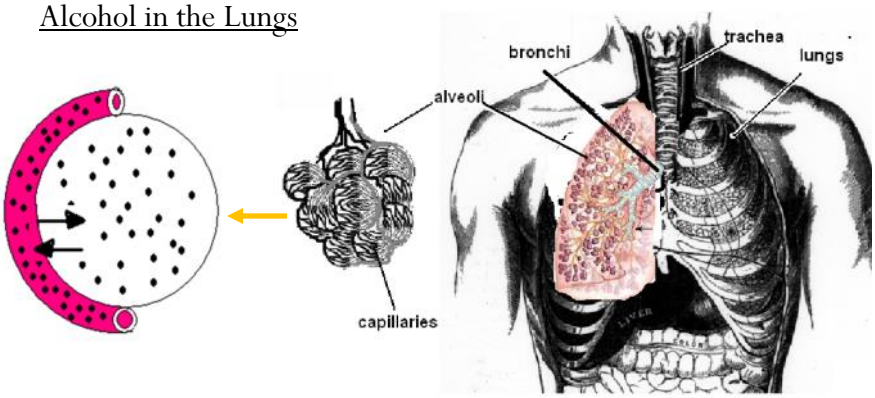


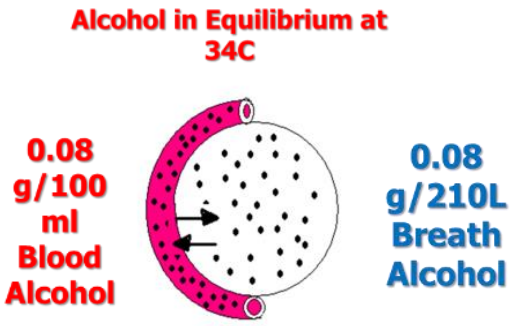
Image adapted from Gray's Anatomy

Alcohol is a liquid, so how does it get into the breath?

In reality most substances have the potential to exist in three different states: solid, liquid, or gas. The tendency of a substance to change states from a liquid to a gas is known as **volatility** and is largely dependent upon the environment in which the substance exists. In a relatively closed environment such as the alveoli, the tendency of alcohol to form a vapor and diffuse into the breath is most accurately described by a principle known as **Henry's Law**. It basically asserts that in a closed system the partial pressure or concentration of a material in the gas state above a liquid will be proportional to its concentration in the liquid state. In layman's terms it means that **in the alveoli the breath alcohol concentration (BrAC) will be proportional to the blood alcohol concentration (BAC)**.

So is the blood alcohol concentration (BAC) always equal to the breath alcohol concentration (BrAC)?

It is important to remember that at equilibrium the amount or concentration of alcohol in the breath is proportional, not equal to the blood alcohol concentration. In fact , at the average temperature of human breath, 34 degrees Celsius, the amount of alcohol in blood is approximately 2100 times higher than the amount of alcohol in the same volume of breath. This relationship between the concentration of alcohol in the blood and the breath can be described by term known as the **blood:breath ethanol partition ratio.** At 34 degrees Celsius, the blood:air ethanol partition ratio has been experimentally determined to be approximately 2100:1. This means that in a closed environment at 34 degrees Celsius there will ultimately be the same amount of alcohol in 100 mL of blood as there will be in approximately 210 L of air in contact with that blood.



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Does this mean that a person with a blood alcohol level of 0.08 g/100mL will always have a breath alcohol concentration of 0.08 g/210L?

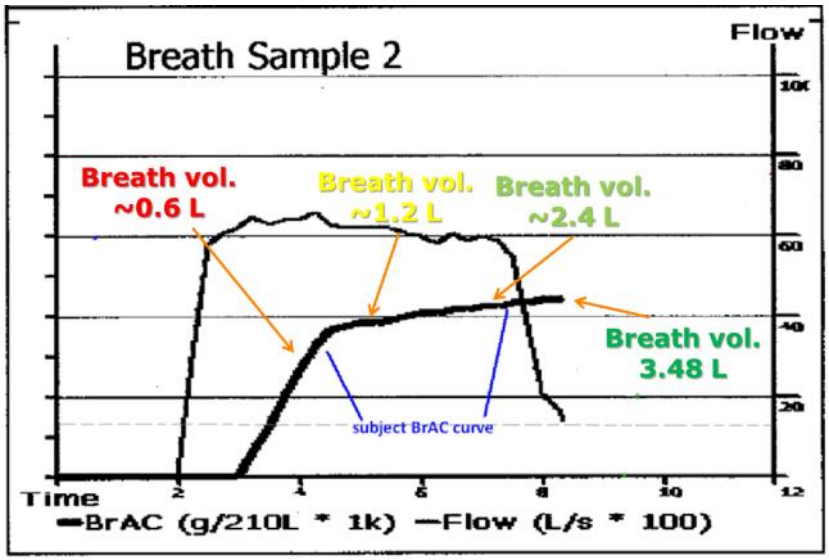
It is true that if we were to directly measure both the blood and air within the alveolar sacs we would find that an alveolar BAC of 0.08 g/100mL would produce an alveolar BrAC of approximately 0.08 g/210L at 34C. This is likely the reason that most states, including Georgia, define alcohol concentrations in terms of grams of alcohol per 100 mL of blood or grams of alcohol per 210L of breath. (See OCGA 40-1-1). In reality, despite quickly reaching equilibrium with the blood in the alveoli, the interaction of breath with the airway surfaces of the respiratory tract during exhalation can affect the alcohol concentration of the air leaving the mouth. This is partly caused by the fact that the upper respiratory tract typically becomes cooled to a temperature less than 34 C during inhalation. Upon exhalation, the breath then reacts with the cooler airway surfaces resulting the loss of heat, water, and ultimately alcohol. Until the airway is warmed and reaches equilibrium with the breath leaving the alveoli, the air leaving the mouth will have a lower alcohol level than the alveolar air, and thus a lower numerical alcohol concentration than the alveolar blood.

How do we prevent alcohol from being lost during delivery of the breath sample?

Though it impossible to prevent all alcohol loss during an exhalation, air originating from deep within the lungs during a **maximum exhalation** will show less loss and better equilibrium than air originating from the upper part of the respiratory tract delivered during the initial part of an exhalation. This can be observed in the illustration below. The measured BrAC initially rises quickly during exhalation but gradually levels off as relative **equilibrium** is reached. Thus, it is important to facilitate a **maximum exhalation** from a test subject to ensure the best chance of obtaining a breath sample that has reached relative equilibrium with the alveolar blood and airway. Simply put the air at the end of a maximum exhalation will give the best reflection of the breath alcohol concentration in the lungs.

Low Breath Volumes:

- **Rapidly changing BrAC.**
- **Significant alcohol loss to the airway is occurring.**
- **Poor reflection of alveolar BrAC**



Higher Breath Volumes:

- **Leveling of the BrAC curve.**
- **Minimal alcohol loss to the airway.**
- **Better reflection of alveolar BrAC**

How do you know if the subject is providing a maximum exhalation?

The maximum amount of air that a person can exhale during a forced breath is known as **vital capacity**. Because **vital capacity** or forced expiratory volume is somewhat dependent upon the health, stature, gender, and age of the subject, it is sometimes difficult to ascertain whether a subject is in fact providing a maximum exhalation. For this reason the Intoxilyzer 9000 evaluates the flow, volume, and slope of the breath sample to ensure a reasonable amount of equilibrium has been reached before it will be accepted. Even when a subject delivers a breath sample sufficient for testing, the measured BrAC in g/210L will be on average 10-15% lower than their measured BAC in g/dL.

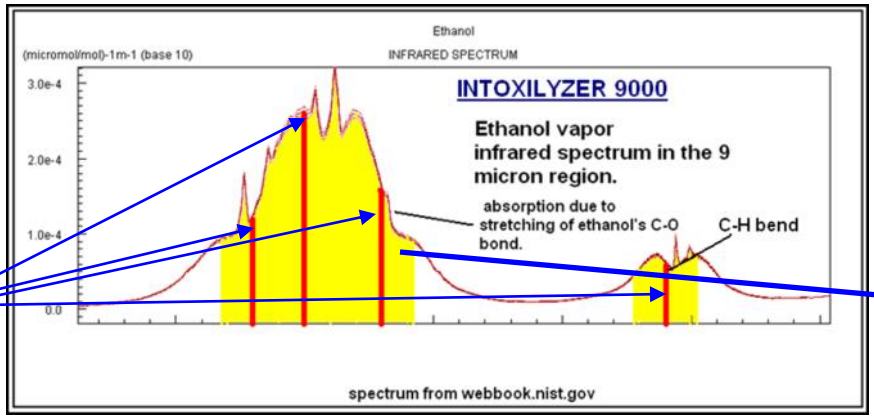
Typical Vital Capacity of Healthy Subjects

Males age <40	Males age 40-70	Females age <40	Females age 40-70
3 to 7 liters	2 to 6 liters	2.5 to 4.5 liters	1.5 to 3 liters

How does the Intoxilyzer 9000 measure alcohol in breath?

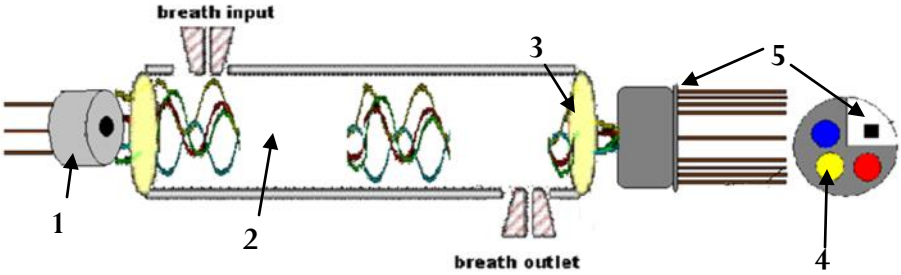
Measuring alcohol in breath requires a method that can both **identify** and **quantify** alcohol. In order to properly **identify ethyl alcohol in breath**, the Intoxilyzer 9000 utilizes an **infrared detection technique**. This is based on the principle that the relative intensity or **pattern of absorption** at different wavelengths of infrared light functions as a molecular "fingerprint" specific to that molecule. Thus, by evaluating "pattern of absorption" at specific wavelengths of infrared light the Intoxilyzer 9000 can specifically identify ethyl alcohol in a breath sample. In order to **quantify the amount of alcohol in the breath,** the Intoxilyzer 9000 measures the **amount of infrared light absorption** . The Beer-Lambert Law dictates that the quantity of light absorbed will always be proportional to the concentration of the molecule in solution. Thus, by measuring the change in the amount of infrared light reaching the instrument's detector, it can quantify the amount of alcohol in the breath sample.

The **pattern of absorption** is used to **identify** alcohol. **(infrared spectroscopy)**



The **amount of absorption** is used to **quantify** alcohol.

(Beer-Lambert Law)



How does the Intoxilyzer 9000 work?

The heart of the Intoxilyzer™ 9000 is its **optical or analytical bench** (see Diagram above). At one end of the bench, an **infrared source (1)** generates light the infrared region of the spectrum, which is pulsed through the sample chamber at a defined frequency. In the sample chamber (2) the infrared light is allowed to interact with a breath sample. If the breath is alcohol free, the infrared light should pass through the sample chamber freely; however, if alcohol is present specific frequencies or wavelengths of infrared light will be absorbed. At the opposite end of the sample chamber, a **lens** (3) focuses the energy (light) onto an infrared energy (light) **detector (5).** Prior to it reaching the detector, the infrared light is filtered by four single wavelength filters (4) that are integrated into the detector unit. Once the light passes through the filter and strikes the detector, the detector generates and electric signal proportional to the amount of light striking it. This signal is then transmitted to a **processing unit** that interprets the electrical signal**.**

Prior to the delivery of a breath sample, the instrument establishes a **zero reference point** by measuring the amount of energy (light) striking the detector when the sample chamber is filled with **ambient air**. During a breath test, as the amount of alcohol vapor in the sample chamber rises, the amount of infrared energy (light) reaching the detector falls relative to the zero point measurement. By determining the difference in the amount of energy (light) striking the detector between the two measurements, the instrument is able to mathematically calculate the breath alcohol concentration in the test sample. The instrument then analyzes at the relative response at each of the four detectors to confirm the identity of ethyl alcohol to the exclusion of other substances.

In summary, **the Intoxilyzer™ 9000 looks for the presence and amount of alcohol in a breath sample. It uses infrared light analyze ethyl alcohol in breath because ethyl alcohol absorbs infrared light in a unique way**. The pattern of absorption is used to identify alcohol and the amount of absorption is used to quantify alcohol in a breath sample. Ultimately, the Intoxilyzer™ 9000 then prints the breath alcohol concentration in **grams of alcohol per 210 liters of breath** as required by Georgia law per O.C.G.A. 40-1-1.

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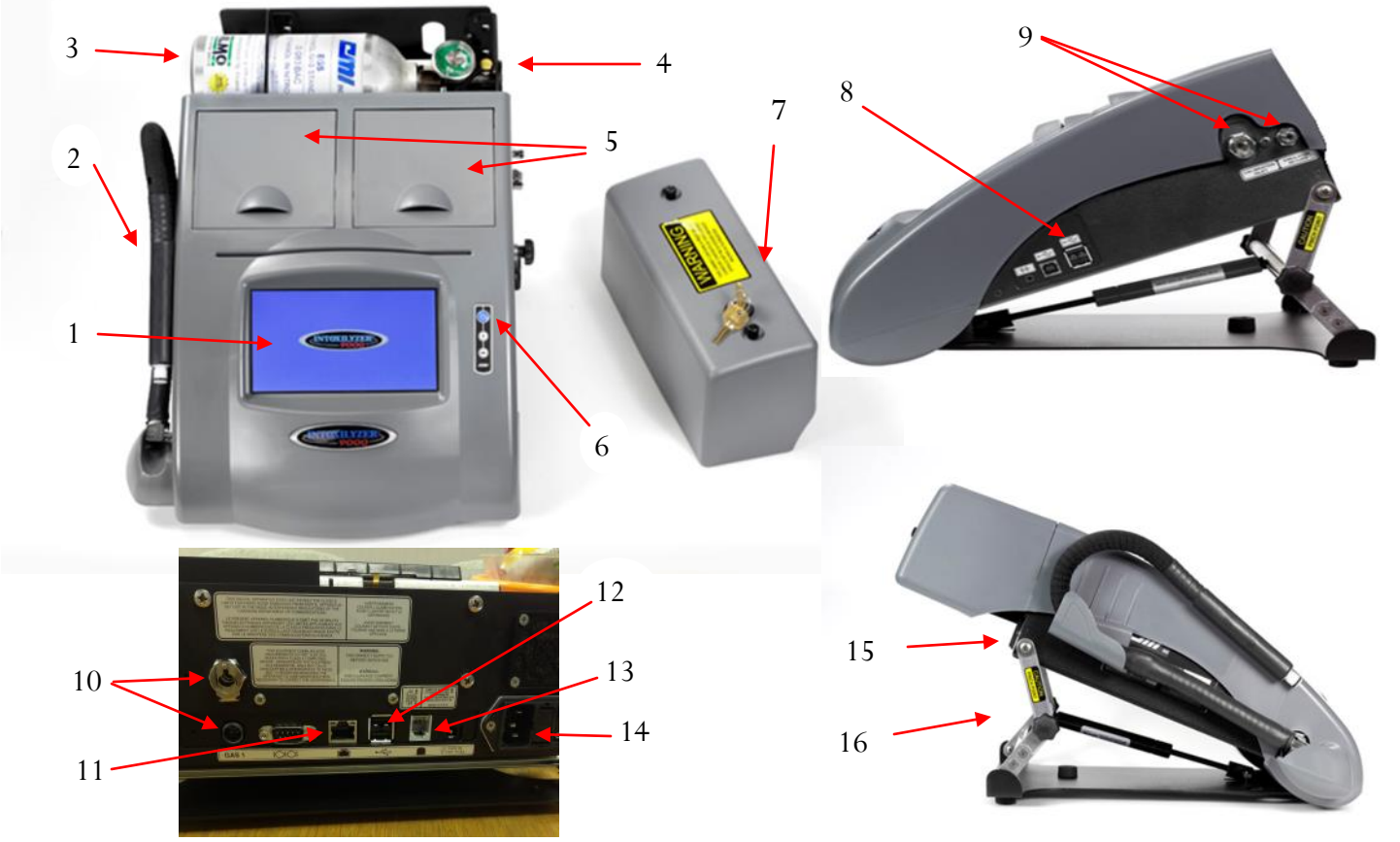
Functional Overview of the Intoxilyzer 9000



#	Part Name	Description
1	Touch screen	Windows CE based user interface with on screen keyboard option.
2	Breath hose	Site of sample introduction, electronically heated and monitored by I9000.
3	Dry Gas Tank	0.080 g/210L dry gas ethanol standard. 67L tank supplied by ILMO / CMI
4	Gas Delivery System	Includes a mounting bracket and an electronically controlled gas regulator
5	Storage Compartment	Two heated compartments, typically used for mouthpiece storage.
6	Power Switch—2nd	Can be used to turn the I9000 on/off if the primary power switch is on.
7	Dry Gas Cover	Lockable cover for the dry gas ethanol standard.
8	USB Ports-Side	2 USB ports for peripheral devices such as the printer or external keyboard
9	Simulator Ports	Connection points for area supervisor's wet bath simulator.
10	Dry Gas Connectors	Gas connector (top) and electronic gas sampler controller connect (bottom)
11	Ethernet Connection	Ethernet/Network connection, not currently utilized.
12	USB Ports-Back	2 USB ports for peripheral devices such as the printer or external keyboard
13	Modem Connection	Modem connector to analog phone line, not currently utilized.
14	AC Power Connect	Connector for primary AC power cord.
15	Power Switch—Primary	Primary power switch for the I9000
16	Pedestal	Adjustable pedestal for adjusting the instrument height.

THE INTOXILYZER 9000 QUESTION SEQUENCE

Start- ing the Test and Login

In order to conduct an evidential breath test on an Intoxilyzer 9000, all operators will be required to login using a predefined login name and PIN. This login process is designed to ensure that each type of user has access to the menu functions appropriate to their responsibility. In order to initiate an evidential breath test the operator must push the green button in the bottom right hand corner of the instrument's touchscreen. The operator will then be prompted to login with their login number and pin:

1. All operators will be given the same login ID and PIN. (It is possible at some point in the future each operator's permit number will serve as his or her login ID.)
2. Each login ID is assigned a specific level of access based on the individual's level of responsibility.
3. Operators are permitted to run tests, run instrument diagnostics, and reprint tests.

Instrument Question Sequence

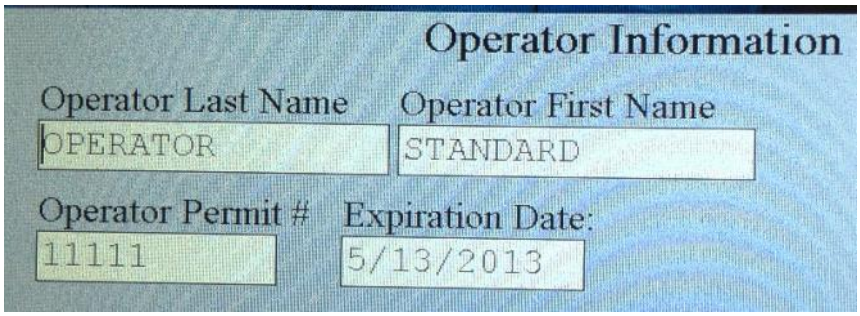
Prior to running a test, the Intoxilyzer™ 9000 requires that the operator provide specific information related to the test. During the instrument question sequence the operator will be asked to provide four types of information:

1. **Operator Information** (Includes Operator Name, Permit Number and Expiration Date).
2. **Arresting Officer Information** (Includes Name and Arresting Officer's Agency).
3. **Subject Information** (Includes Name, DOB, Gender, and Driver's License Number.)
4. **Incident Information** (Includes Violation Date and Time, Case Number, and Reason for Test.)

Operator Information

Operators will be prompted to provide the following information. This information should be reviewed carefully before selecting the advance screen arrow at the right of the instrument display. ***(Note: Operators should be careful not to leave the default "Standard Operator" information when completing the pre-test questions.)***

1. Operator Last Name: type in last name and any suffix (i.e.: Jr., Sr., III, etc.)
2. Operator First Name: type in first name as it appears on the operator's permit (no rank, nickname, or other title)
3. Permit Number: type in permit number as it appears on the operator's permit.
4. Expiration Date: type in permit expiration date as it appears on the operator's permit. Test run after the permit expiration date are not considered valid and the operator must renew their permit before conducting a breath test.



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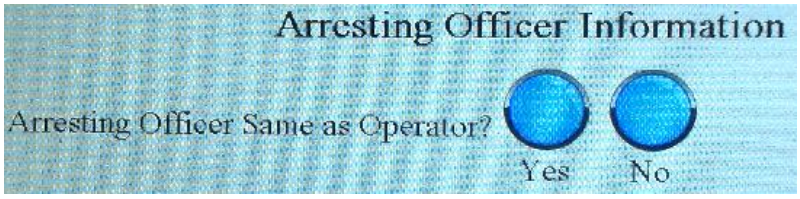
Arresting Officer Information

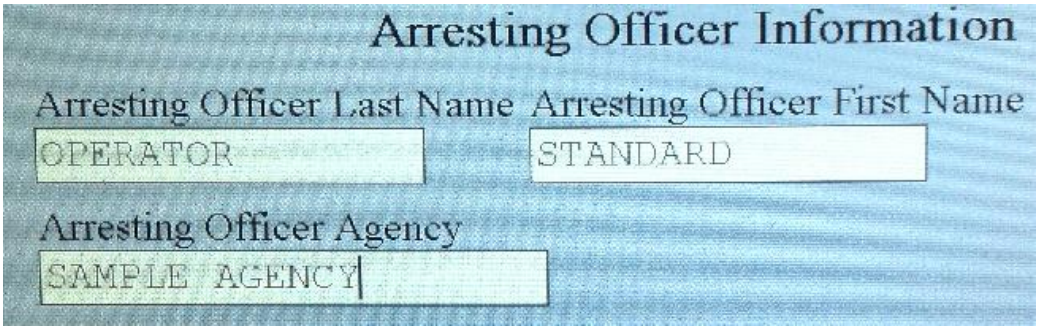
Once the operator has entered the required information and selected the screen advance arrow, he or she will be asked whether the arresting officer is the same as the operator. If yes is selected then the arresting officer last and first name fields will be automatically populated with the operator's name, if no is selected the information must be manually entered by the operator.



5. Arresting Officer Last Name: Type in last name and any suffix (i.e.: Jr., Sr., III, etc.)

6. Arresting Officer First Name: Type in first name (no nicknames, titles, etc.)

7. Arresting Officer Agency: Type in the arresting officer's agency as close to the following format as possible. **City or County name followed by PD or Co SO**. (e.g. Atlanta PD, Hall Co SO,GSP Post 10, DNR region 3). It is important the agency names are consistent within a given agency in the event that the arresting agency needs to be identified at a later time.



Subject Information

8. Subject Last Name: Type in last name and any suffix (i.e.: Jr., Sr., III, etc.)

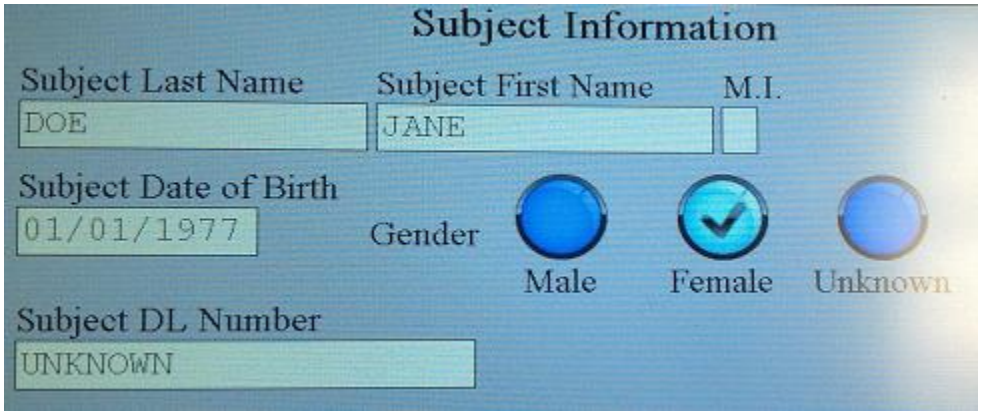
9. Subject First Name: Type in first name (no nicknames, titles, etc.)

10. Subject M.I.: Type in the subject's middle initial if one is known. (no nicknames, titles, etc.)

11. Subject Date of Birth : Type in the subject's date of birth in the format MMDDYYYY. If the subject's DOB can not be determined then type in the current date.

12. Gender : Select the subject's gender. If in question, the specified gender can typically be found on the subject's diver's license. In the unlikely event the subject's gender can not ultimately be determined select unknown gender option.

13. Subject DL Number : Type in the subject's driver's license number. Be sure to enter the state abbreviation for out of state drivers' license. If the driver's license number is unknown at the time of the test, type UNKNOWN.



Incident Information

Once the operator has entered the required information and selected the screen advance arrow, he or she will be asked to enter Incident Information.

14. Violation Date: Type in the violation date in the format MMDDYYYY

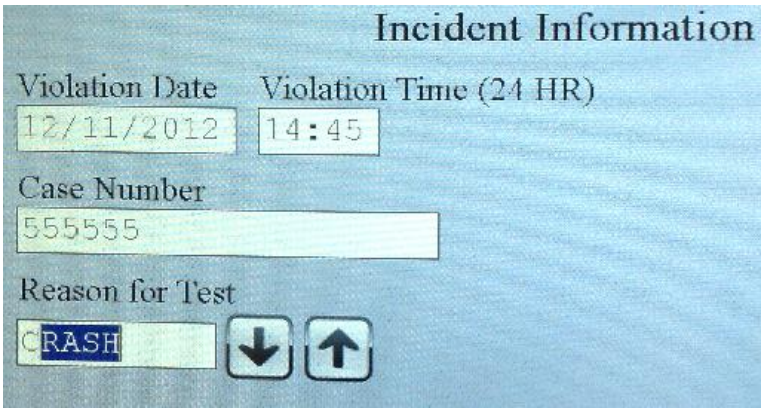
15. Violation Time: Type the violation time in 24 hour format (e.g. 0300 or 2100)

16. Case Number: Type in an agency case number if desired. This field is optional.

17. Reason for Test : Select the reason for the test from the list box by using the arrows to the right of the box. The available options are as follows:

- DUI - Test is the result of a DUI arrest
- Crash – Test is the result of a DUI arrest where a crash is involved
- Fatality – Test is the result of a DUI arrest where a fatality is involved.
- BUI - Test is the result of a boating under the influence arrest
- Probation – Test is conducted as part of a probation revocation or evaluation.
- Training – Test is to be solely used as a training sample.
- DUI - Test is the result of a boating under the influence arrest
- Other – Test is being conducted for reasons other than those listed above.
- QC - Reserved for quality control tests performed at the direction of GBI-DOFS.

Note: The "reason for test" selection has no bearing on the reliability of the test and should be based on the operator's best estimation of the circumstances at the time of testing.



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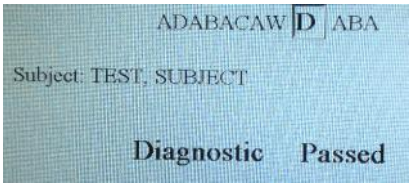
THE INTOXILYZER 9000 TEST SEQUENCE

The Intoxilyzer™ 9000 will perform a breath alcohol test after all of the pre-test questions are answered. Before starting the test sequence the instrument will ask the operator if they would like to review the information. This gives the operator the opportunity to check spelling and correct any errors prior to running the test. Once the test sequence is underway, the information supplied by the operator cannot be changed. The test sequence executed by the Georgia Model Intoxilyzer 9000 is **ADABACAWDABA** where each letter corresponds to a component of the test. Each component of this testing process is summarized below.

Diagnostics (D) **ADABACAWDABA**



As seen in the test sequence above, prior to testing each breath sample, the instrument performs an electronic self diagnostic. Though it does not test every part of the instrument, the self diagnostic is designed to verify that the unseen, internal electrical components are attached and functioning as expected. Most importantly the diagnostic verifies the performance of primary critical components of the instrument's optical bench including the detector and infrared light source.

Intoxilyzer 9000 Self Diagnostic

Element	What it checks	Typical Warnings	Corrective Action
Analytical Checksum	Software for corruption.	Checksum Violation*	*Place out of service and contact Area Supervisor.
Software Version	Software for availability.	Incompatible Software	Software is busy, attempt another test.
Voltage/Current	Voltage and current reading from various internal sensors.	Various: V or Current Sense Errors. (12V, 5V, 3.3V,USB, Printer, pump, temp., etc.)	Power cycle instrument and attempt another test.
Memory	The capacity of both the RAM and storage memory.	Various: Memory Errors	Complete test, but contact area supervisor.
Real Time Clock	The performance of the time keeping circuit.	RTC Error	Power cycle instrument and attempt another test.
Temp Regulation	Temperatures of the internal components, sample chamber, and breath hose.	Various: Temp Sensor Error or Temp out of range.	Power cycle instrument and attempt another test.
ADC	The performance of the analog to digital converter.	ADC Read, Range, or Span Error	Power cycle instrument and attempt another test.
Analytical Status	Verifies the performance of the IR control module. (light source and detector)	IRPCM Status Error	Power cycle instrument and attempt another test, if the I9000 is not locked out.
ITP	Verifies that a reduction in IR output will result in a specific reduction in detector signal. (This relationship is determined during the instrument's ITP adjust.)	ITP Out of Tolerance	Allow the instrument to stabilize and then attempt another test. If the problem persists, contact the area supervisor.

Note: While most diagnostic failure warnings are due to temporary stability issues that can be addressed by additional warm up time, chronic failures should be reported to local area supervisors for further evaluation.

Air Blank (A) **ADABACAWDABA**

Unlike the diagnostics which are designed to be an electronic check of various components of the optical bench, the air blank routine tests the conditions of the instrument's breath sample pathway and pumps. **Simply stated, Air Blanks are used to purge the instrument with ambient air and then verify that the instrument is alcohol free both before and after every subject sample, calibration check and diagnostic. If this is successfully accomplished the instrument will print Air Blank .000 on the final breath test report.**

What happens during the Air Blank?

During the Air Blank, the instrument :

1. **Purges** the sample chamber by pulling air through the breath sample pathway from the breath tube through the sample chamber and out of an external vent using an internal pump.
2. **Continuously measures** the alcohol level in the sample chamber using the detector and signals the pump to continue purging until the instrument is alcohol free or a specified time limit has been exceeded.
3. **Informs** the operator whether or not the detector returned an acceptable alcohol free reading at the conclusion of the air blank. If the instrument can not purge the sample chamber and produce an acceptable alcohol free result, the instrument will return an **"Ambient Fail" or "Purge Fail"** warning and abort the test.
4. **Sets a zero reference measurement** for the test using the ambient air in the sample chamber if the purge was successful.

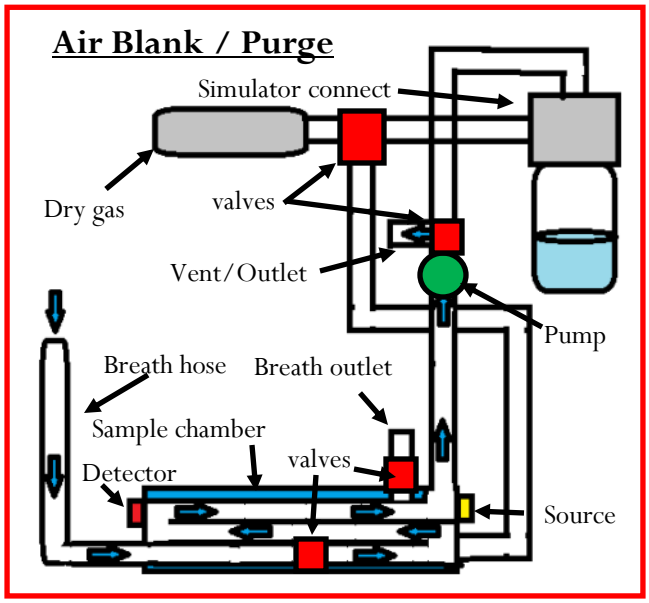


*Illustration only, not an exact representation of parts.

What should the operator do during the Air Blank?

As in all elements of the breath test, the operator should continue to monitor the subject, instrument, and environment during the Air Blank. Because the instrument is attempting to purge the sample chamber with air from the ambient environment, it is important that the test be conducted in a **well ventilated environment**. Several things should be considered when determining whether a well ventilated environment for testing exists:

1. **Fumes from chemicals** such as those found in cleaning supplies or paints may be sufficient to prevent the instrument from obtaining a zero reference measurement if present in large amounts in the testing environment. If you smell a strong chemical odor in the testing environment, ventilate the area before testing.
2. **Subjects with high BrAC values or who emanate a strong odor of alcohol** may contribute significant alcohol to the environment around the instrument if they are in a confined space with or in too close proximity to the instrument. It is advisable to have subjects remain a reasonable distance from the instrument's breath hose during Air Blanks to reduce the likelihood of Ambient or Purge Fail warnings.
3. **Mouthpieces restrict air flow** through the instrument during the Air Blank and may prevent it from properly purging. In addition, the mouthpiece can contain condensation from the subject's breath, and thus should be promptly removed after the subject finishes providing a sample as instructed by the instrument.

What happens if the environment during the Air Blank contains alcohol or other chemicals?

In most instances, alcohol or other chemicals in the ambient environment are not sufficient to have any affect on a breath test and the Air Blank will indicate an alcohol free condition by printing Air Blank 0.000 on the test report. If during the Air Blank, the instrument can not sufficiently purge the sample chamber and produce an alcohol reading that falls below a predefined threshold, the instrument will return an **"Ambient Fail" or "Purge Fail"** warning and abort the test. In the unlikely event that alcohol exists in the instrument sample chamber at the conclusion of the Air Blank in a concentration below the "Ambient Fail" threshold, the Intoxilyzer 9000 will set the zero reference level at an alcohol concentration greater than zero. This effectively means that the following measurement will be lower than the actual value by the amount of alcohol remaining in the instrument at the end of the Air Blank. While this should have minimal impact on subject test results, it may in some instances cause the instrument's **dry gas calibration check to yield a value that is lower than the acceptable range** .

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Breath Test/ Breath Sample (B) **ADABACAWDABA**

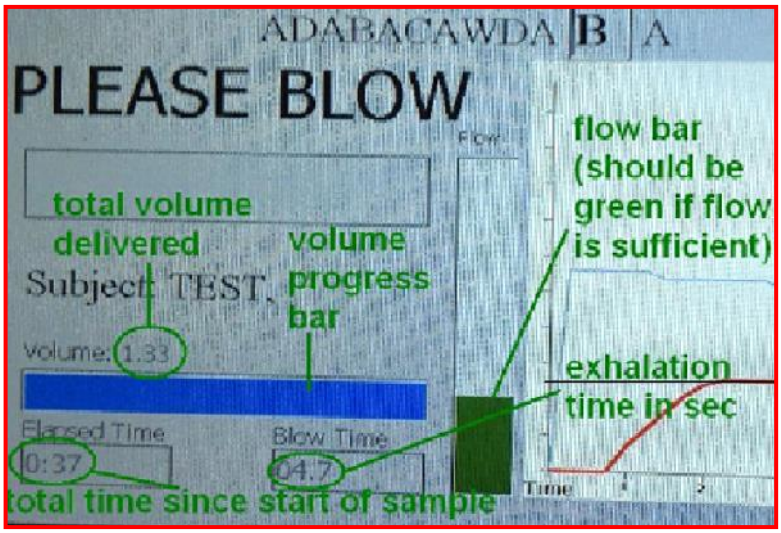
Once the Air Blanks and Diagnostic are successfully completed the instrument will proceed to request a breath sample from the subject by displaying "Please Blow" on the screen. When this occurs, the operator should:

1. **Insert a new mouthpiece** securely into the breath tube. A new mouth piece should be used for each subject sample.
2. **Instruct the subject** to take a deep breath, put their mouth on the mouthpiece making a firm seal and blow into the mouthpiece hard enough to keep the tone sounding and for as long and as steady as possible. Simply put, subjects should take a deep breath and give a long, steady exhalation as if trying to blow up a balloon.
3. **Encourage the subject blow until they are physically unable to provide any more air** or until the instrument indicates that it has completed receiving the sample**.**

The subject has **three minutes** to provide an adequate breath sample that meets the requirements for flow, volume, and level slope. If the subject stops blowing before providing an adequate breath sample, "PLEASE BLOW" will continue to be displayed. In addition, a beep will sound every few seconds until the subject begins blowing or until three minutes have elapsed from the time the instrument initially requested the subject to blow into the mouthpiece. If the subject does not provide an adequate breath sample in three minutes, the instrument will print "INSUFFICIENT SAMPLE" on the final report.

How does the operator ensure that they get an adequate breath sample?

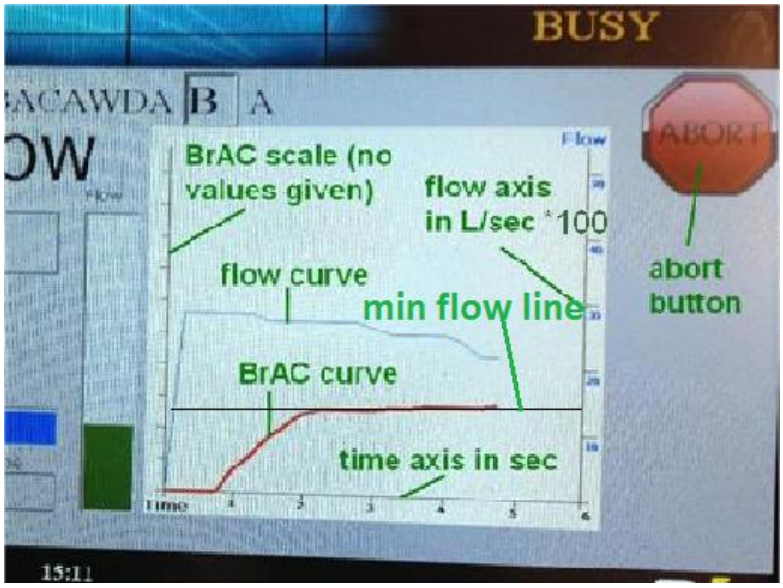
It should be understood that the ability of an operator to obtain an adequate sample for testing largely depends on the cooperation, and in rare instances the health, of the subject. In order to keep the operator informed of the subject's progress in providing an adequate breath sample, the Intoxilyzer 9000 will display several key metrics relative to the subject's breath flow, volume, and alcohol concentration. The operators should use these metrics to assess the subject's compliance and further instruct the subject how to provide a good breath sample if necessary. These metrics include:



- **Volume**: This indicates the total volume delivered in the current exhalation. The Intoxilyzer 9000 requires a minimum of approximately **1.1 L of breath** be delivered in a single exhalation.
- **Volume Progress Bar**: Shows a graphical representation of the volume delivered during the exhalation.
- **Flow Bar**: Shows a graphical representation of how hard the subject is blowing. The subject should provide enough breath flow so that the bar **maintains a green color for as long and as steady as possible**. If the breath flow rate is below **0.15 L/sec** the bar will appear **yellow** and the subject needs to blow harder. If the subject blows too hard, the flow bar will appear **red**. If this happens the subject should stop blowing and re-attempt to provide a sample with a longer, more steady exhalation.
- **Blow Time**: Shows the time elapsed since the current exhalation began.
- **Elapsed Time**: Shows the total time elapsed since the breath sample was requested by the instrument. An insufficient sample will be registered if a sufficient sample has not been provided within 3 minutes.
- **Breath Profile:** Shows a historical representation of the subject's BrAC and breath flow during the exhalation. A subject's breath flow curve should show a steady, sustained flow above the minimum line and the BrAC curve should typically show a steady rise followed by a gradual leveling off. The Intoxilyzer 9000 requires the subject to keep the breath flow above the minimum long enough to obtain at least 1.1 liters of volume and blow until the BrAC curve exhibits an acceptably level slope. **To this effect, the primary purpose of the breath profile is to provide immediate feedback to the operator about whether or not the subject is complying with their instructions, so they can better facilitate an optimal sample from the subject or articulate why a sufficient sample was not obtained.** (See example on following page.)

Flow Curve: Shows a graphical representation of the subject's breath flow rate during the test. The units of the graph axis are L/sec *100. **The instrument will cease accepting the sample when the flow drops below 0.15 L/sec or a displayed reading of 15, <u>which is indicated by a dotted line</u>.**

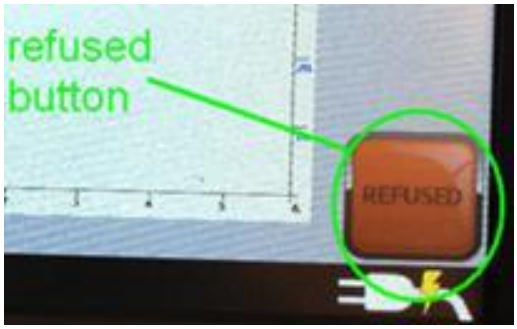
BrAC Curve: Shows a graph of the change in alcohol level as the subject blows. No values for the BrAC curve are displayed. This is to ensure that neither the subject's nor the operator's actions are affected by a knowledge of the BrAC. **Note: No BrAC curve will be visible on the screen or printout when the subject's breath flow is below 0.15 L/sec.**



What if the subject refuses to provide an adequate sample?

There are two basic types of refusals that an operator may encounter during a breath test:

Verbal Refusals: Should the subject verbally refuse to provide a sample after the test has been set up, the operator can select the **REFUSED** button at the lower right hand corner of the instrument display. Once the subject begins blowing this option will disappear.



Non-verbal Refusals: As previously discussed, if the subject does not provide a breath sample within three minutes that meets several basic criteria for flow, volume and level slope, the Intoxilyzer 9000 will print an **Insufficient Sample** Warning on the breath test report in lieu of an alcohol level. Unless there is a medical or physical limitation that prevents the subject from providing enough air, failure to provide an adequate sample can be construed as a non-verbal refusal. At this point the operator may want to ask the subject if they possess any medical limitations that would have prevent them from providing an adequate sample. Ultimately, the **arresting officer** must be able to articulate how the subject refused to take the test and may want to document any observations to this effect in the additional comments section of the report.

Once the subject sample is complete, the Intoxilyzer 9000 will evaluate the breath sample, instrument and the environmental conditions to ensure that no limitations to producing an accurate measure of the subject's BrAC exists. If these conditions are met the instrument will then proceed to the next test element; neither the operator nor the subject will know the measured alcohol level until the final report is printed. A discussion on the elements evaluated by the instrument to determine if conditions for accurate testing exists can be found in the *Breath Alcohol Limitations* section of the manual.

Calibration Check (C) **ADABACAWDABA**

The Intoxilyzer 9000 is configured to check it own calibration using an external reference or standard as part of the test sequence. This test is known as a dry gas calibration check or **Dry Cal Chk** for short. **The purpose of the Dry Cal Chk is to verify that the instrument is producing results with the expected degree of accuracy.** Upon initial instrument set up a cylindrical tank containing a compressed gas of known ethanol level is attached to the instrument. During the Dry Cal Chk, the Intoxilyzer 9000:

1. Releases gas from the tank into the instrument's sample chamber.
2. Measures the alcohol level in the dry gas.
3. Compares the reading to the expected target value for the tank.

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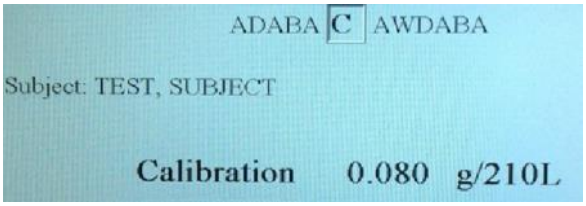


How does the operator know if the Dry Cal Chk passed?

Though the target value for all dry gas ethanol tanks utilized in the state of Georgia should be 0.080 g/210L, the Dry Cal Chk will pass if it returns any value is **within +/- 5% or +/- 0.005 g/210L** of that target. In practical terms **the adjusted alcohol measurement obtained during the Dry Cal Chk must be between 0.075 and 0.085 g/210L**. (Note: a result of 0.075 or 0.085 is acceptable) Ultimately a passed Dry Cal Chk tells us that the instrument is producing results with the expected degree of accuracy at the time of the test.

What is meant by the term adjusted alcohol measurement?

Because the actual amount of ethanol in the fixed volume of gas delivered from the compressed ethanol gas standard varies slightly based on the atmospheric pressure, the Intoxilyzer 9000 is equipped with a barometric pressure sensor that automatically adjusts the reported cal check value based on the measured atmospheric pressure at the time of the test. At normal operational temperatures, the barometric pressures found throughout the state of Georgia would not be expected to cause the ethanol gas standard concentration to vary by more than approximately +/-5% of the target value stated on the gas cylinder. It should be noted that even though atmospheric pressure can have a small effect on the concentration of ethanol obtained from a gas standard during a dry gas calibration check, atmospheric pressure has no significant effect on a subject's measured breath alcohol concentration.

Why is there a permissible range of +/- 0.005 g/210L for the Dry Cal Chk?

As we will discuss later in this manual, all measurements have some degree of uncertainty associated with them. In order to correctly interpret the significance of a Dry Cal Check result, the amount of expected uncertainty or variability in the results must be understood. In reality the manufacturer only certifies that alcohol level in the dry gas ethanol tank is within +/- 0.002 g/210L of 0.080 at normal pressure. Additionally, CMI lists the uncertainty in the I9000 calibration as +/- 0.002 g/210L. Taking these things into account along with the estimated accuracy of the barometric pressure sensor, it can be expected that a properly functioning instrument will return Dry Cal Chk results between 0.075 and 0.085 g/210L over 99% of the time provided no adverse environmental or tank related factors exist.

What happens if the Dry Cal Chk is not within the acceptable range?

If the measured alcohol level at the conclusion of the Dry Cal Chk is not within the acceptable range, the instrument will abort the test and return an **Out of Tolerance** warning. An Out of Tolerance Dry Cal Chk will result in the disabling of the instrument, preventing any tests from being run until the underlying issue is addressed. (See *Summary of Common Instrument Display Messages* for a further discussion of corrective steps.) The primary causes of an Out of Tolerance Warning are:

1. **Environmental**: As previously discussed, in some instances low level environmental alcohol can cause an elevation of the zero reference baseline established after the Air Blank. This can effectively cause the measured alcohol level to be lowered by an amount equivalent to the alcohol level in the ambient air around the instrument. Ventilation of the testing environment should effectively resolve this issue.
2. **Gas Delivery**: When the pressure in the dry gas ethanol tank approaches that of the ambient environment, it can deliver inconsistent samples to the instrument. This means when the tank is approaching empty or is improperly installed, it may deliver samples that are not exactly 0.080 g/210L. In this case, an Out of Tolerance reading is not reflective of the instrument's calibration, but of the composition of the dry gas sample. Re-installation or replacement of the gas tank should effectively resolve this issue.
3. **Instrumental:** If environmental and gas delivery issues have been eliminated as potential causes of an Out of Tolerance Warning, it is possible that there is an underlying instrumental issue. If ventilation of the testing environment and replacement of the gas tank does not resolve the Out of Tolerance warning, the area supervisor should be contacted so they can assess whether an underlying instrument problem exists.

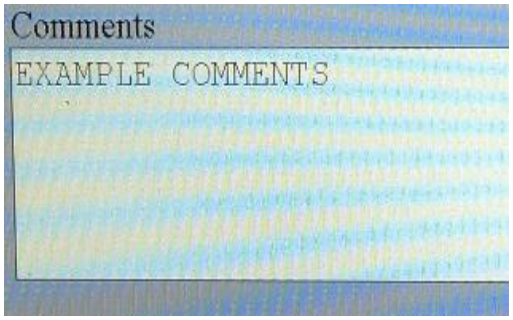
Wait (W) **ADABACAWDABA**

Following the Dry Cal Chk (C) and the subsequent Air Blank (A), the instrument will initiate the Wait (W) element of the test as seen in the sequence above. The Wait is simply a 60 second timer that is designed to expire before the instrument will move on to the next Diagnostic (D). Ultimately this will result in a total time of approximately 5 minutes between subject samples. The exact time between subject samples will vary based on several factors including the subject's willingness to immediately provide a sample when told to blow. The intermission between breath samples provides the subject with sufficient time to recover from giving the first sample. In addition, as discussed in the *Breath Alcohol Limitations* section of the manual, **obtaining replicate samples from the same subject at least 2 minutes apart is an important component of the instrument's safeguards against residual or mouth alcohol**. Though it is very unlikely that a subject is affected by residual or mouth alcohol at the time of a breath test, the operator should use the wait between samples to continue to observe the subject for any overt signs of regurgitation.

When the wait is complete, the instrument will repeat the sequence of Diagnostic, Air Blank, Breath Sample, Air Blank. **A complete breath test generally consists of two breath samples; however if after providing a sample that produces a printed alcohol concentration analysis, the subject refuses to provide a second sample then the first sample is legally admissible as evidence of his or her alcohol concentration.** Though the subject is not legally required to provide two breath samples, obtaining two subject samples is greatly preferred because it allows the operator to demonstrate:

- That the breath alcohol concentration obtained from the subject was reproducible and not adversely affected by some single unexpected event .
- That any potential differences in the breath alcohol concentration owing to how the subject provided the sample are small and accounted for by charging the subject with the lower of the two results and applying a measurement uncertainty of +/-5% or 0.005, whichever is higher.
- That residual or mouth alcohol did not have any significant effect on the breath alcohol readings.

Once the test is completed, the instrument will ask the operator for any additional comments. Though this field will usually be left blank, it gives the operator an opportunity to add any additional comments about the subject's performance during the breath test or the testing conditions. These comments should be primarily used to:



- **Explain any unexpected results** (i.e. Operator inadvertently hit radio transmit button during the test causing RFI warning)
- **Describe any non-compliant behaviors** (i.e. the test subject would not make complete seal with mouth around the mouth piece, no tone or breath volume measurement was displayed by the instrument)
- **Document any unusual conditions** that were present or arose during the test. **For all testing done in mobile testing environments, the additional comments should be used to document the temperature of the testing environment.** (i.e. temperature at the time of the test was 72F) Testing environments should be maintained between 60 and 93 Fahrenheit during the administration of breath tests.

After adding any necessary comments, the operator will be asked how many copies of the breath test report are desired. **The operator should sign the breath test report on the line provided for the operator's name and give the test subject a copy of the completed report. In addition, the operator should place a copy of the breath test report in the GBI test logbook.**

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Georgia Model Intoxilyzer 9000 TestID# 0502140107 Date 10/12/2014

Instrument Info

Inst Serial # 90-000502 Software Version 9406.05.00 Agency DUIVILLE POLICE DEPARTMENT
Target Value 0.080 Lot # 21913080A2

Subject Info

Subject Name DEVILLE, THOMAS C
DOB 12/20/1967 DL 364836488
Additional Comments

Measured BrAC (g/210L) 0.167 (+/- 0.008)
Gender Male Reason for Test: DUI

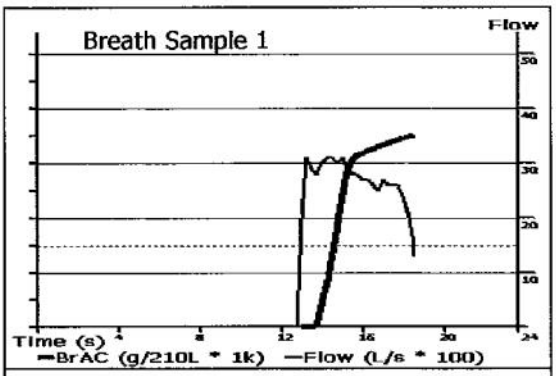
Operator Info

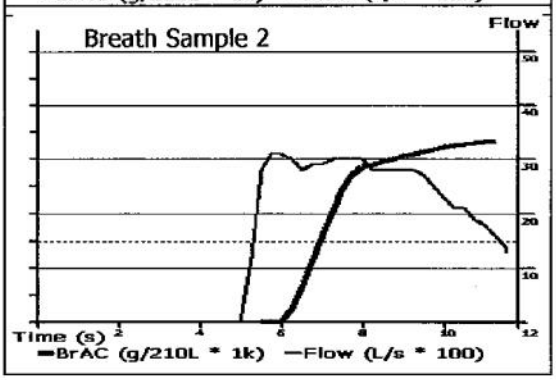
Operator Name WIN, CHARLES
Arresting Officer BALD,HARROLD
Arresting Agency DUIVILLE PD

Permit # 912345 Expiration Date 09/25/2017
Violation Date 10/12/2014 Violation Time 00:08
Case # 2014100

Result Details

Test	g/210L	Time
Air Blank	0.000	00:57:22
Diagnostics	Passed	00:57:57
Air Blank	0.000	00:58:36
Subject Sample	0.175	00:59:06
Breath Volume	1.49 Liters	
Air Blank	0.000	00:59:59
Dry Cal Chk	0.085	01:00:20
Air Blank	0.000	01:01:00
Diagnostics	Passed	01:02:38
Air Blank	0.000	01:03:15
Subject Sample	0.167	01:03:38
Breath Volume	1.61 Liters	
Air Blank	0.000	01:04:31





Operator's Signature

Date of Last Calibration adjustment: 08/22/2013
Date of Last Inspection: 7/25/2014
CMI Calibration Laboratory is a ISO 17025 accredited calibration laboratory for breath alcohol measuring instruments.

Printed On: 10/21/2014 09:03

EXAMPLE REPORT

THE INTOXILYZER 9000 BREATH TEST REPORT

The Intoxilyzer 9000 prints the breath test result on a full 8.5" by 11" sheet of copy paper using a Windows CE compatible printer. The Intoxilyzer 9000 breath test report contains information divided into several major sections. A summary of the information printed on the breath test report is as follows:

Header Information

Georgia Model Intoxilyzer 9000 TestID# 0502140107 Date 10/12/2014

Georgia Model Intoxilyzer 9000 shows that the instrument was configured for use in Georgia.

Test ID# is a unique record number for each test. If evaluation of electronically retained data is needed the test can be identified by the Test ID. (*The clearing of instrument records can result in duplication of the TestID.*)

Date shows the date the test was performed.

Instrument Info

Instrument Info

Inst Serial # 90-000502 Software Version 9406.05.00 Agency DUIVILLE POLICE DEPARTMENT
Target Value 0.080 Lot # 21913080A2

Instrument Serial Number shows the unique identification number for the instrument.

Software Version shows the software version number installed on the instrument at the time the test was run.

Agency shows the agency to which the instrument is registered. This should also reflect whether the instrument is listed as a mobile instrument. (E.g. Atlanta PD mobile unit)

Target Value shows the target value of the dry gas standard in g/210L. Thus, a 0.080 g/210L target value would be displayed as 0.080.

Lot # shows the lot number for the current dry gas standard.

(Target value and lot # are entered by the agency contact or area supervisor at the time of tank installation.)

Subject Info and Operator Info

Subject Info

Subject Name DEVILLE, THOMAS C Measured BrAC (g/210L) 0.167 (+/- 0.008)
DOB 12/20/1967 DL 364836488 Gender Male Reason for Test: DUI
Additional Comments

Operator Info

Operator Name WIN, CHARLES Permit # 912345 Expiration Date 09/25/2017
Arresting Officer BALD,HARROLD Violation Date 10/12/2014 Violation Time 00:08
Arresting Agency DUIVILLE PD Case # 2014100

Most of the fields contained within the Subject Info and Operator Info sections of the report with the exception of Measured BrAC are entered by the Operator and discussed in the *Intoxilyzer 9000 Georgia Operator's Training Manual*. Measured BrAC will be addressed in the following section titled *Evaluation of Sample Results*. A summary of all of the fields on the breath test report can be found in the table on the following page.

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Summary of Breath Test Report Fields

Field	Location	Description	Other Notes
Georgia Model Intoxilyzer 9000	Header	Specifies the type of instrument used.	
Test ID	Header	Unique record # for the test	Automatically assigned by the I9000
Date	Header	Date of the test	Automatically assigned by the I9000
Inst Serial #	Inst. Info	Unique # assigned to the instrument	Number is located on sticker on breath hose side of the instrument.
Software Version	Inst. Info	The software version being used by the instrument at the time of the test	Software is updated periodically as needed. New versions of software do not invalidate test run with previous ones
Agency	Inst. Info	Agency to which the I9000 is assigned	Input by the area supervisor at the time of installation.
Target Value	Inst. Info	The alcohol level in the dry gas standard attached to the I9000.	Input by area supervisor or agency contact during tank installation. Should be 0.08
Lot #	Inst. Info	# assigned to the lot of gas in the dry gas tank attached to the I9000.	Should be present on the tank and the paperwork shipped with the tank.
Subject Name	Subject Info.	Subject Last name, first and MI.	Input by the operator.
Measured BrAC	Subject Info.	The lower of the 2 breath sample results +/- measurement uncertainty	Will remain blank if there are not two breath sample results present.
DOB	Subject Info.	Subject's date of birth in the format MM/DD/YYYY.	If it is unknown at the time of test use the date of the test as DOB.
DL	Subject Info.	Subject's drivers license #.	If unknown designate as unknown.
Gender	Subject Info.	Subject's gender.	Can be male, female, or unknown.
Reason for Test	Subject Info.	The reason for the test as best understood by the operator.	Must be selected from a list of choices. Test listed as other should be clarified in the additional comments .
Additional Comments	Subject Info.	Additional comments added by the operator at the time of test.	May be left blank. Should be used to clarify or document info. related to the test.
Operator Name	Operator Info	Operator first and last name.	Preferably as it appears on the permit.
Permit #	Operator Info	Unique # assigned to the operator.	Should be 6 digits.
Expiration Date	Operator Info	Date the operator permit expires.	The test must be run between the permit issue date and expiration date.
Arresting Officer	Operator Info	Arresting Officer first and last name	
Arrest. Agency	Operator Info	Arresting officer's agency.	
Case #	Operator Info	Agency case # or incident #.	Optional field.
Air Blank	Result Details	Purges and then verifies I9000 is alcohol free.	Should read 0.000 for passing check.
Diagnostics	Result Details	Electronic self check verifies I9000 is operating as expected.	Should read Passed.
Subject Sample	Result Details	The subject's BrAC in g/210L.	Measures the last attempted exhalation.
Breath Volume	Result Details	The vol. of breath delivered in L.	Measures the last attempted exhalation.
Dry Cal Chk	Result Details	The result of the dry gas cal. check.	Should be within 0.005 of the target value.
Breath Profile	Profile	Curves for breath flow (light) and BrAC (dark) during entire test.	Dotted line is min breath flow 0.15L/sec. BrAC shows no values, Flow is L/sec *100.
Date Last Cal. adjustment	Footer	The date the last time CMI adjusted the instrument's calibration.	This is only done on an as needed basis. Calibration is verified by 17025 procedure.
Date of Last Inspection	Footer	The date of the last quarterly inspection.	This should be done once every quarter that the instrument is in service.
Printed On	Footer	The date the report was printed.	This date will differ if a report is re-printed

EVALUATIION OF SAMPLE RESULTS

In addition to the instrument, subject, and operator information, the Intoxilyzer 9000 provides numerous pieces of information regarding the subject's test. In order to properly interpret the test result, it is important for the Intoxilyzer 9000 operator to understand the meaning and significance of each of these pieces of information.

Measured BrAC (g/210L)

Measured BrAC (g/210L) 0.167 (+/- 0.008)

The Measured BrAC field on the report gives he breath alcohol concentration in g/210L with which the subject is to be charged and contains several important pieces of information.

1. The first number found in the Measured BrAC field is **the lower of the two subject sample results** obtained during test sequence. If there are not two breath sample results available, the Measured BrAC field will remain blank; however, O.C.G.A. 40-6-392 states that two sequential breath samples will be requested from a subject for testing and **the lower of the two results shall be determinative for accusation and indictment purposes**. Thus, where two consecutive subject sample results exist, the Measured BrAC shows the lower of the two results. In addition, O.C.G.A. 40-6-392 states that in **order for those results to be admissible they shall not differ from each other by more than 0.020**.
2. The operator should also note that the Measured BrAC gives the alcohol concentration in g/210L. This is because O.C.G.A. 40-1-1 defines **alcohol concentration** as grams of alcohol per 100 milliliters of blood or **grams of alcohol per 210 liters of breath**. Though an operator will never obtain 210L of breath from a subject during a single exhalation, if the Measured BrAC value in g/210L exceeds the "per se" alcohol concentration specified in O.C.G.A. 40-6-391, they are by definition in violation of the DUI statute. This emphasizes the fact **the Intoxilyzer 9000 as used in Georgia measures breath, not blood alcohol levels.**
3. The second number reported in the Measured BrAC field is the **estimated measurement uncertainty** for the test result. It is reported as a +/- value and is calculated as **+/-5% of the subject's Measured BrAC or +/-0.005 whichever is greater**. The estimated measurement uncertainty is always truncated to three digits. (For example: 5% of 0.167 is 0.00835, and thus the expressed measurement uncertainty is given as +/- 0.008.)

How should the operator interpret the Measured BrAC in light of the measurement uncertainty?

In layman's terms, the measurement uncertainty acknowledges that the subject's true measured BrAC at the time of testing could be slightly higher or slightly lower than the measured value given. In the example above, it cannot be said that the subject's BrAC was exactly 0.167; however, it can be said with reasonable certainty that the subject's true BrAC was between 0.159 and 0.175 g/210L at the time of testing.

What do you mean by reasonable certainty?

The existence of **measurement uncertainty** does not mean that the operator can not be certain of the subject's breath alcohol concentration. It does, however, mean that the degree of certainty in the "exactness " or accuracy of a measurement can be quantified. It is only fair that the degree of certainty in the test results be made known to the affected individuals. Technically, reasonable certainty in the cases of the Measured BrAC field means that there is a 95% confidence level for the measurement uncertainty of +/- 5% or +/-0.005 g/210L, whichever is greater. In less technical terms, this basically means that when an Intoxilyzer 9000 test is run on a subject under normal conditions, there is a 95% probability the subject's true BrAC is within +/- 5% or +/-0.005 g/210L of the average of their two breath sample results. This uncertainty is assessed on the lower of the two results to further give the subject the benefit of the doubt. In order to expand this probability to 99%, the estimated measurement uncertainty would have to be reported as +/- 7% or +/- 0.007 g/210L, whichever is higher.

Do other measurements have uncertainty?

Operators should be aware that any analytical measurement process, no matter how well designed, will exhibit some degree of uncertainty. People will sometimes use terms such as **accuracy** or **margin of error** to describe

this uncertainty, though the term preferred by scientists is **measurement uncertainty.** For an example of measurement uncertainty, consider a doctor who measures a fevered child's temperature with an oral thermometer and obtains a reading of 103.5 degrees Fahrenheit and then measures same child two minutes later and obtains a reading of 103.3. What is the child's true temperature? In reality the doctor may take 100 readings over a 5 minute period and find that the average temperature reading is in fact 103.4 degrees but that 95% of all the readings fluctuate between 103.0 and 103.8. This fluctuation in the measured temperature illustrates the measurement uncertainty of the analytical method. Thus, the child's true temperature would be most accurately expressed as a range, such as 103.4 F (+/- 0.4) . The measurement uncertainty in this example may be due to instrumental factors such as limitations in the thermometer itself or sampling factors such as how and where the thermometer was placed in the child's mouth. Though the Intoxilyzer 9000 and the breath testing process are designed to minimize the measurement uncertainty in the analytical result, it can not completely eliminated. Through statistical evaluation of various factors such as subject tests and control results, **the Division of Forensic Science has been able to estimate the measurement uncertainty for a complete breath test under normal conditions on the Intoxilyzer 9000 as +/- 5% or 0.005 g/210L whichever is higher.** This means that it can be said with 95% confidence that the subject's true breath alcohol concentration is within 5% or 0.005 g/210L of the measured BrAC value reported by the instrument.

What is the source of uncertainty in breath testing?

Though the measurement uncertainty exhibited by a particular analytical method can have multiple contributors, sources of measurement uncertainty fall into one of two categories: **systematic error** or **bias** and **random error**.

1. **Systematic error** or **bias** occurs when the mean result produced by an analytical method is either consistently high or consistently low. Through extensive evaluation of known control samples the breath testing methods used in Georgia have been shown to exhibit no significant systematic error or bias. The term usually used to describe systematic error is **accuracy**.
2. **Random error** arises from random fluctuations in the sample readings that are normally distributed around some mean value. These random fluctuations are statistically described by the **precision** of the measurement and are quantified with statistical terms such as **standard deviation** and **%CV**. Random error comprises almost all of the estimated measurement uncertainty for evidential breath testing.

While a detailed discussion of guidelines for estimation of uncertainty in measurement is beyond the scope of this manual, operators should understand that the largest contributor to the measurement uncertainty in the measured BrAC is the **natural sampling variability** inherent to how the subject provides the breath sample. In a complete test, the measured BrAC is the product of the analysis of two separate breath samples. **Each breath sample will have a *slightly* different chemical composition** due to its interactions with the subject's alveolar blood supply and respiratory tract. This interaction is largely what causes the BrAC curve to rise early during the exhalation before eventually leveling off. This is a limitation imposed by human physiology, but its effect on the variability of sample results can be minimized by encouraging subjects to give reproducible, maximum exhalations. In fact, a study of replicate samples from test subjects shows that **variability between samples goes <u>down</u> as the breath volume delivered goes <u>up</u>**. This limitation is one reason that the Intoxilyzer 9000 requires all breath samples to meet certain criteria before they will be accepted as **adequate** or **sufficient.** Ultimately any breath sample that is composed of less than 100 % "deep lung" alveolar air, or air that has not reached chemical and thermal equilibrium with the pulmonary alveoli ,will have a lower alcohol concentration than the subject's actual alveolar alcohol concentration.

What is the "0.020 allowable difference" and what does it have to do with the measurement uncertainty?

Operators should be careful not to confuse the 0.02 allowable difference required by OCGA 40-6-392 with the instrument's measurement uncertainty which is approximately 5% of the average breath test value. **In order for breath sample results to be legally acceptable in the State of Georgia they must not vary by more than 0.020 grams**. To check any particular test to ensure that it is within the 0.02 allowable difference, subtract the smaller result from the larger one. If the difference is 0.020 grams or less, the test is acceptable. If the sample results do not exhibit the required agreement, the test is not acceptable and the Intoxilyzer 9000 will display a message of "**No 0.020 Agreement**" in the

result details section of the breath test report. If this occurs the operator must wait twenty minutes before retesting the subject. Note that the operator is statutorily prohibited from obtaining more than two breath tests where an adequate sample has been provided. Thus, if two consecutive breath tests from the same subject both differ by more than 0.020, the operator must request a blood test if a chemical test is to be performed. In this situation a third breath test can not be requested. **A lack of 0.020 agreement between samples can be caused by the failure of the subject to provide a good maximum exhalation as previously discussed, or by the existence of residual mouth alcohol, which will be discussed in the section entitled *Breath Alcohol Limitations*.**

Result Details

The result details section of the breath test report shows the result of each test element and when the test was performed. Operators must reasonably establish that the Intoxilyzer 9000 was working properly with all its parts attached and in good working order at the time of testing so that their test results will be admissible. **The information provided in the result details section of the report should be considered when developing an opinion whether or not the instrument was working properly at the time of testing.** Normal details listed on an Intoxilyzer 9000 Breath Test Report include the result and time of the following test elements:

Result Details

Test	g/210L	Time
Air Blank	0.000	00:57:22
Diagnostics	Passed	00:57:57
Air Blank	0.000	00:58:36
Subject Sample	0.175	00:59:06
Breath Volume	1.49 Liters	
Air Blank	0.000	00:59:59
Dry Cal Chk	0.085	01:00:20
Air Blank	0.000	01:01:00
Diagnostics	Passed	01:02:38
Air Blank	0.000	01:03:15
Subject Sample	0.167	01:03:38
Breath Volume	1.61 Liters	
Air Blank	0.000	01:04:31

Air Blank: As discussed earlier, the Air Blank essentially purges the instrument with ambient air and then verifies the instrument is alcohol free both before and after every subject sample, diagnostic, and calibration check . **A displayed result of 0.000 indicates that the Air Blank was successful.** This is indicative that the internal components of the breath sample pathway, such as the valves, switches, tubing, and pump, are all in good working order and that the environment around the instrument does not contain significant levels of alcohol or other volatile chemicals. In the event that the Air Blank is not successful, the test will be aborted and a warning message will appear at the bottom of the result details section of the report. If this occurs the operator should ventilate the testing area before attempting another test.

Diagnostics: As previously discussed, the Diagnostics are essentially an electronic self check of the instrument that verifies that its electronic internal components are functioning as expected. **A displayed result of "Passed" indicates that the Diagnostics were successful.** If the diagnostics do not pass all of the required criteria, the breath test will abort and **Diagnostic Failed** will be indicated on the report in the result details section. The most common cause of a diagnostic failure is a failure to sufficiently warm up the instrument before attempting a test. Thus, in the event of a diagnostic failure, allow the instrument to stabilize and then attempt another diagnostic. This can be accomplished by cycling the instrument's power. **Please note that significant RF in the testing environment during the diagnostic can result in a diagnostic failure warning.** Persistent diagnostic failures or failures resulting in a lockdown of the instrument may indicative of the need for maintenance. Should this occur, contact your local area supervisor.

Dry Cal Chk: The Dry Cal Check element of the breath test verifies the instrument is functioning as expected and producing results with the expected degree of accuracy. **A displayed result between 0.075 and 0.085 indicates that the Dry Cal Chk was successful.** The target value, which should be 0.080 g/210L, and the lot number of the reference gas used to check the calibration can be found in the Instrument Details section of the report. **An approved list of ethanol gas standards and vendors will be maintained by the Division of Forensic Sciences. Be sure to consult the gas standard Material Safety Data Sheet (MSDS) for safe handling and disposal instructions.** *See Dry Gas Ethanol Standard FAQs for further information.*

Subject Sample/ Breath Volume: The Intoxilyzer 9000 evaluates each breath sample provided by the subject to determine if any limitations to providing an accurate measure of the breath alcohol concentration exists. If such a limitation exists, the instrument will place an * in the subject sample field and display a warning message at the bottom of the Result Details section. A discussion of these limitations can be found in the *Breath Alcohol Limitations* section of the manual. **If no display message exists, the subject sample result should be an accurate measure of their breath alcohol concentration.**

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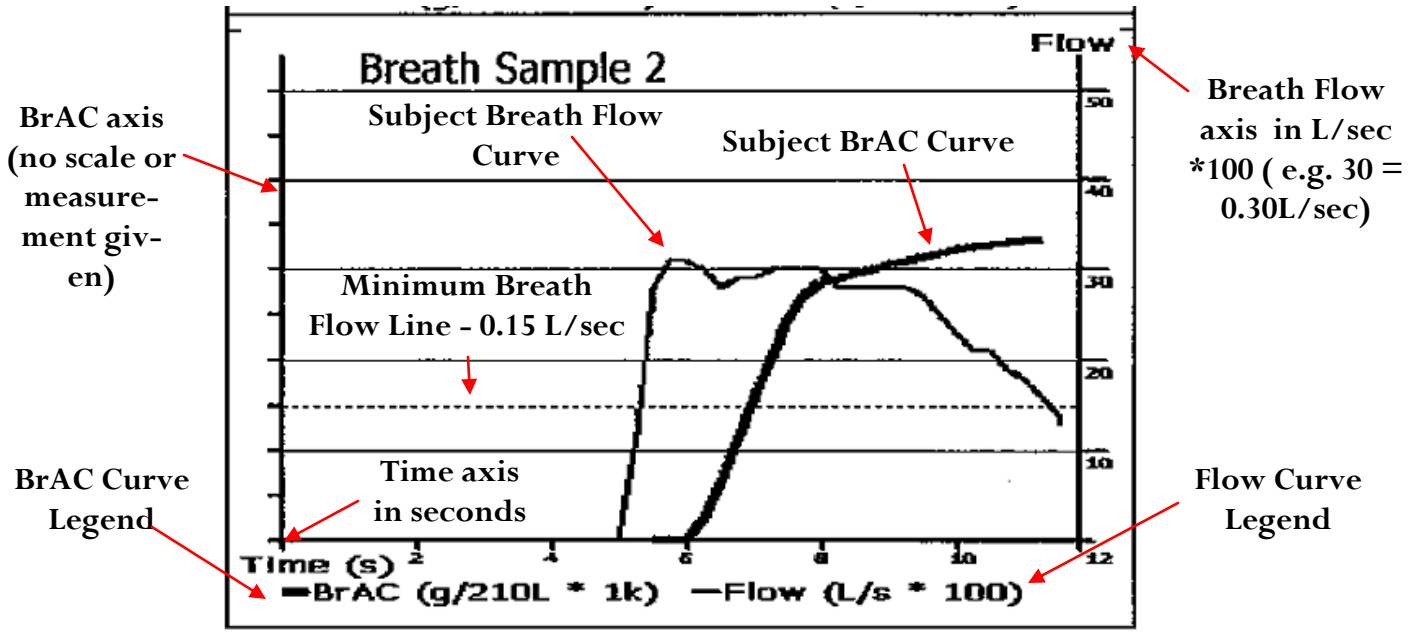
Result Details - Breath Sample Profile/ Breath Curves



Each time the subject is asked to provide a sample, the Georgia Model Intoxilyzer 9000 will produce a **breath sample profile** for the duration of the sample. This profile is a graphical representation of the subject's **breath flow and breath alcohol concentration**. **This profile is <u>not intended</u> to be used to provide a numerical measure of the subject's breath alcohol concentration, or as a tool to determine whether the subject provided a valid sample**, but is meant to help officers interpret the underlying causes when the Intoxilyzer 9000 flags a particular sample as **Invalid** or **Insufficient**. With regard to this function the printed breath profile contains several pieces of useful information.

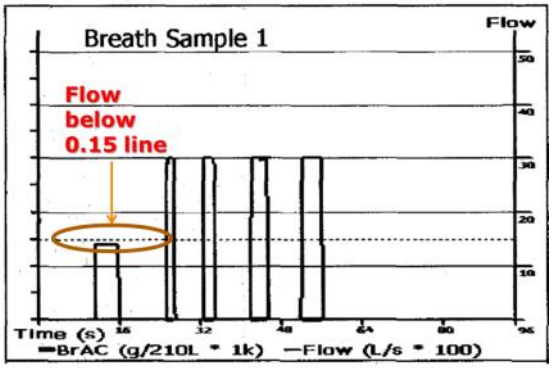
Element	Description	Requirements	Interpretation Notes
Flow (Liters per second *100)	A graphical representation of the subject's **breath flow rate** throughout the entire test.	The Georgia Model Intoxilyzer 9000 will cease accepting a sample when the flow rate drops below 0.15 L/s or 15 on the flow axis, indicated by the dotted line. Flow rates below 15 or 0.15 L/sec are **Insufficient**.	Optimally the breath flow rate will be sustained **above the minimum flow line without interruption or significant fluctuation for a long as possible**. Failure to do this may be an indication of non-compliance from the subject.
(BrAC) (No values given)	A graphical representation of the subject's **breath alcohol concentration** throughout the entire test.	Breath samples must achieve a sufficiently level slope to be accepted by the I9000 as **sufficient.** Breath samples that show a rise followed by a <u>significant drop from the peak BrAC during a single exhalation</u> will be flagged as **Invalid Samples**. (Note: A second attempted blow from a subject will naturally show a drop followed by a rise in BrAC, this is not a drop from the peak BrAC and is **<u>not an Invalid Sample</u>**)	The typical breath alcohol profile from a **compliant subject** will show an initial rise in the BrAC followed by a gradual leveling off. If a subject attempts more than one exhalation during a test or the breath flow temporarily drops below the minimum, the breath alcohol curve may appear broken or disconnected. The BrAC curve under this scenario may even appear to drop and rise again as the recorded BrAC graph connects the final BrAC value from the previous exhalation with the BrAC values from current attempt. This is normal under these conditions and is not an indication of mouth alcohol.

Interpreting Breath Sample Profiles– Insufficient Samples

As stated earlier the breath profile is **not intended** to be used as a tool to determine whether the subject provided a valid sample, but is meant to help officers interpret the underlying causes when the Intoxilyzer 9000 returns a warning message associated with the subject's breath flow or breath alcohol curve such as **Insufficient Sample** or **Invalid Sample.** In the case of **Insufficient Samples,** the breath profile serves as a record of how the subject attempted to comply with the officer's request to provide a breath sample. Noncompliance with the officer's request to provide a breath sample may be an intentional, non-verbal **refusal** to provide a sufficient sample or unintentional in cases of severe medical or physical limitations. The breath profile, along with the subject's own assessment of their respiratory health, should be used as a tool to assess whether an **Insufficient Sample** should be construed as a refusal. (*For more information on non-verbal refusals see Komala v State - 237 Ga App 236*)

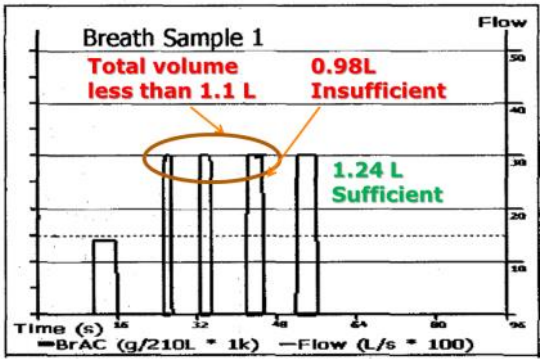
Insufficient Sample – Cause #1:

When looking at the circled exhibit at right, during this attempt, a **breath flow** of **0.15 L/sec** or more had not been reached when the subject stopped blowing as indicated by the fact that the flow curve never gets above the dotted minimum breath flow line. In this particular example the subject should have been instructed to **blow harder.** The displayed breath volume in this case would have been 0.0L.



Insufficient Sample – Cause #2:

When looking at the circled exhibit at right, during these attempts, a **breath volume** of **1.1 L** or more had not been reached when the subject stopped blowing. It can be seen that the breath flow exceeded the minimum breath flow line, but the total volume delivered never exceeded the 1.1L threshold until the last attempt. In this particular example the subject should have been instructed to **blow longer.**



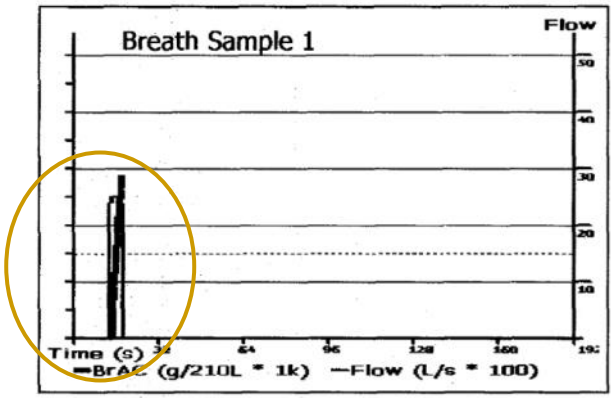
Insufficient Sample – Cause #3:

When looking at the circled exhibit below, during this attempt it is evident that a **level slope** in the darker BrAC curve had not been reached when the subject stopped blowing. This subject had exceeded the minimum flow requirement and had delivered a total volume of 1.28L, but the sample was still flagged as **Insufficient** because the requirement for a **level slope** in the BrAC curve was not met. In this particular example the subject should have been instructed to **blow longer**.

Result Details

Test	g/210L	Time
Air Blank	0.000	12:21:00
Diagnostics	Passed	12:21:35
Air Blank	0.000	12:22:12
Subject Sample	*	12:25:22
Breath Volume	1.28 Liters	
Air Blank	0.000	12:26:04

*Insufficient Sample -
Insufficient Sample. Subject did not provide a sufficient sample within the time allotted.



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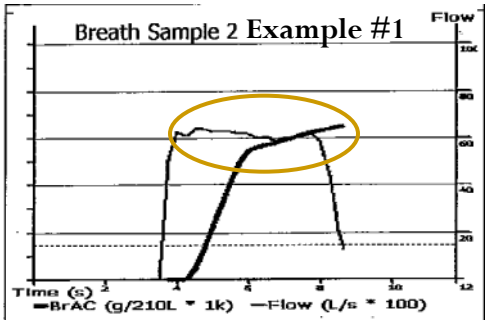
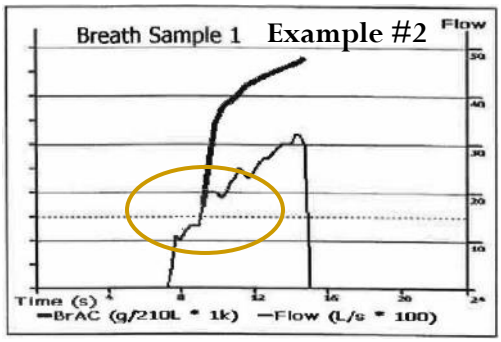
Interpreting Breath Sample Profiles — Sufficient Samples

While a useful tool in interpreting the causes of noncompliance in insufficient breath samples, operators should be careful not to misinterpret the breath profile when a sufficient sample is provided. While a highly compliant subject will generally produce a smooth continuous breath flow and BrAC curve as seen in the fist example below, a subject who makes multiple attempts to provide a sample during a breath test may produce a BrAC profile that has an irregular or broken appearance. These samples are no less valid than the ideal profile, provided no warning message is given by the instrument.

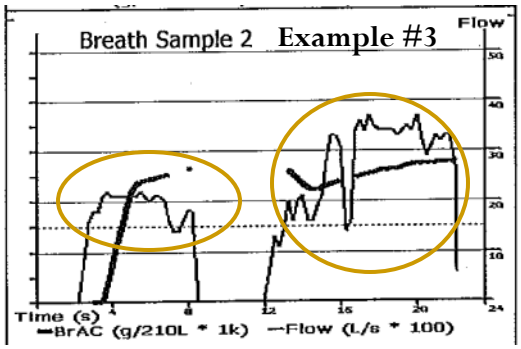
#1 Good Compliance – At right is an example of a subject who showed good compliance to the operator's instructions. As you can see the subject **immediately started providing a sample** approx. 3 sec into the test. They provided a **steady breath flow** well **above the minimum** dotted line for 6 sec, and **the BrAC curve significantly leveled out before the subject stopped blowing**. The breath volume for this sample was 2.9L.



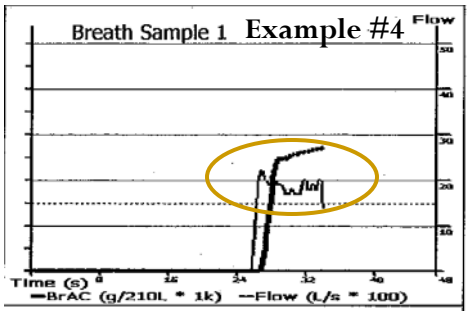
#2 Sufficient/ Valid Sample — This sample ultimately resulted in a **valid test**; however, BrAC curve did not appear until the **breath flow** reached the minimum line. <u>This is expected under these conditions</u>. Even though alcohol was present in the initial breath, the BrAC curve will not be displayed when the subject's **breath flow** is below the minimum dotted flow line.

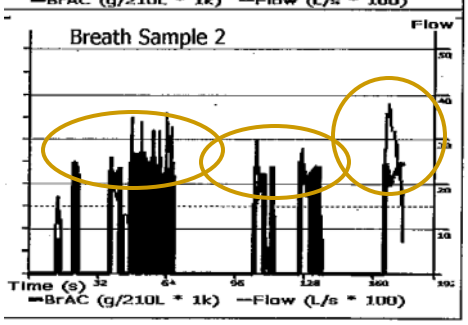


#3 Sufficient Sample/ Initial Lack of Compliance - Initially, the subject stopped blowing before the **minimum volume** was obtained, stopping at the 8 second mark. A second attempt was made at the 12 second mark. Notice how the darker BrAC curve shows apparent drop when the new exhalation is attempted. <u>This is normal and expected and is not indicative of an Invalid Sample</u>. A drop in BrAC occurs as new breath of lower BrAC displaces air from the previous exhalation of higher BrAC. As the subject continues to blow, BrAC will continue to rise as it approaches a plateau as seen in the second attempt, which ultimately produced a **valid test**. The example also shows a brief interruption of the BrAC curve at 8 & 16 sec when the flow drops below the min.



#4 No 0.020 Agreement / Sufficient Sample - These two breath profiles are from a test that resulted in **No 0.020 agreement**. As you can see during Breath Sample 1, the subject blew just hard enough to stay above the **minimum flow.** The final volume was 1.48L, just above the min required volume of 1.1L. During Breath Sample 2 the operator noted that the subject repeatedly would start and stop blowing. The breath flow profile demonstrates that the subject made multiple attempts but would not sustain an exhalation within the first 120 seconds of the test. Finally approximately 160 sec into the test the subject provided enough volume and flow to meet the minimum requirements for sufficiency. Notice how the breath flow was not steady, but dropped continuously over the exhalation. Ultimately the volume delivered in this blow was 2.36 L. Due to the fact that the subject had a high BrAC of approx. 0.24, the inconsistent breath volumes resulted in a lack of agreement between samples.





BREATH ALCOHOL LIMITATIONS

Through over seventy five years of documented research and testing, breath alcohol testing has proven to be an accurate and reliable means of ascertaining a person's breath alcohol concentration, leading it to become the most widely used technique for measuring legal alcohol levels in the United States today. This being said, when evaluating any scientific testing method it is not only important to determine whether it is fit for the purpose for which it was intended, but it is also important to identify any limitations or conditions that might realistically have a significant affect on the method's expected degree of accuracy and reliability. While numerous different claims regarding the limitations of breath alcohol testing have been evaluated over the years, very few conditions have been actually found to have any significant effect on an evidential breath testing instrument's ability to accurately quantify alcohol in a subject's breath. The few conditions that have been found to potentially affect a breath test result have been specifically addressed through numerous checks and safeguards incorporated into both the Georgia Model Intoxilyzer 9000 and the breath testing method. Through these checks and safeguards, **the Georgia Model Intoxilyzer 9000 is designed to alert the operator when conditions exist that could potentially impact the expected degree of accuracy and reliability of the breath test** and prevent a numerical result from being reported in the Measured BrAC field. **The quarterly inspection is specifically designed to test the Intoxilyzer 9000's ability correctly identify these conditions and notify the operator.** Additionally, operators should focus on the best practices learned during training to prevent these conditions from being present during a breath test and should understand the proper action to take should one of these conditions be identified.

SUBJECT/SAMPLE CONDITIONS

1. **Insufficient Sample** - As previously discussed, a person's breath alcohol concentration is ultimately the product of a continual exchange of ethanol between the blood and the breath that occurs in the pulmonary alveoli; however, as breath moves throughout the respiratory tract a significant amount of alcohol can be lost to the cooler airway surfaces until they reach a balance with the alveolar air. By establishing minimum requirements for breath flow rate, total volume, and BrAC slope, the instrument can ensure that a sample will not be accepted until this loss is effectively minimized and the measured BrAC is reflective of the alveolar BrAC. **This can also be facilitated by encouraging subjects to provide a maximum exhalation.** In reality, even under ideal conditions, any breath sample delivered to the instrument will have an alcohol concentration lower than that found within the air of the alveoli.

What is a Sufficient Sample?

Technically, according to O.C.G.A. 40-6-392, **a sufficient breath sample is one that produces a printed alcohol concentration analysis;** however in order to produce a printed alcohol concentration analysis the Intoxilyzer 9000 requires subjects to meet at least three minimum requirements in single exhalation:

- A breath **flow rate** of at least 0.15 L/sec
- A total **volume**, of at least 1.1L
- A **level slope**

An **Insufficient Sample** warning will be printed if the subject does not meet all of these requirements **within three minutes**.

Result Details

Test	g/210L	Time
Air Blank	0.000	10:15:17
Diagnostics	Passed	10:15:53
Air Blank	0.000	10:16:30
Subject Sample	0.000	10:17:26
Breath Volume	1.28 Liters	
Air Blank	0.000	10:18:10
Dry Cal Chk	0.083	10:18:32
Air Blank	0.000	10:19:13
Diagnostics	Passed	10:20:53
Air Blank	0.000	10:21:30
Subject Sample	*	10:24:40
Breath Volume	0.74 Liters	
Air Blank	0.000	10:25:19

*Insufficient Sample -
Insufficient Sample. Subject did not provide a sufficient sample within the time allotted.

If an operator obtains a test result indicating an insufficient sample, they should re-instruct the subject and attempt a second test. In the event that a second insufficient test result is obtained, the operator should seek to ascertain whether the cause of the insufficient sample was an intentional act of non-compliance or the result of a medical or physical limitation. The breath volume and breath profile printed on the report along with the operator's own observations can be used to assess the reasons for insufficiency. **Failure to provide a sufficient sample may be considered a non-verbal refusal provided that no medical or physical limitation to the subject providing a sufficient sample exists.**

2. **Refusal** - According to O.C.G.A. 40-5-67.1, a subject may refuse to submit to a chemical test of their breath. Should the subject **verbally refuse** to provide a sample after the pre-test information has been entered, the operator may select the refusal option from the instrument menu. This option will disappear once the subject starts blowing into the instrument. If the subject does not verbally refuse, but fails to provide a sufficient sample within the three minutes allotted for the test, an **Insufficient Sample** result will be produced. Under some circumstances, this may be considered a refusal. **Information regarding how the subject failed to provide a sample can be documented in the additional comments section of the report.**

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3. **Residual or Mouth Alcohol** -

Residual or Mouth alcohol is a condition that occurs when the concentration of alcohol within the airspace of the oral cavity exceeds the alcohol concentration of the breath. It can occur anytime alcohol comes in contact with the mouth, but is short lived and can be effectively eliminated by employing several simple safeguards.

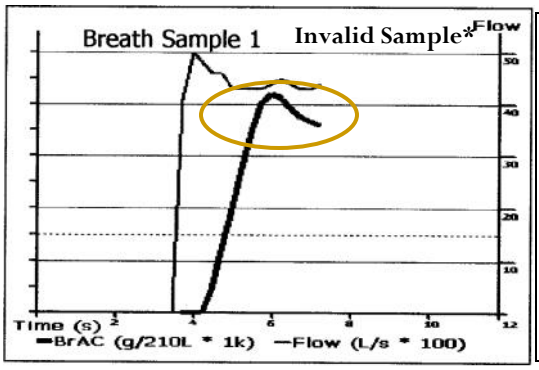
1. **The 20 minute wait/ deprivation period.** During the 20 minute period immediately prior to the breath test **the subject should be deprived of alcohol**. This applies to all initial breath tests and cases where exposure to residual or mouth alcohol is suspected. In order for the condition known as residual or mouth alcohol to be present, the subject must have oral exposure to some source of alcohol within 10 to 15 minutes of the test. This exposure can either be from some external source such as an alcohol containing beverage or an internal source such as alcohol containing material regurgitated from the stomach into the oral cavity. **Complete dissipation of mouth alcohol occurs within 10 to 15 minutes of exposure,** and thus if a subject is not exposed to some source of alcohol within 20 minutes of the test, then mouth alcohol will have no significant effect on the measured breath alcohol reading. This is the basis of the 20 minute deprivation period.

2. **The Slope/Mouth Alcohol Detector.** In the rare event that a subject is exposed to some source of alcohol within 20 minutes of the test and this exposure goes undetected by the operator, the instrument is designed to identify exhalation profiles associated with the residual /mouth alcohol condition. As seen in exhibit *Breath Sample 1*, the **breath alcohol profile typically associated with residual or mouth alcohol is characterized by an initial rapid rise in alcohol concentration** as the subject starts to provide a sample **followed by a distinct drop from the peak measured breath alcohol concentration** as the subject continues to blow. Thus, the Intoxilyzer 9000 is designed to flag any breath sample that exhibits this profile during a continuous exhalation as an **Invalid Sample**.

Result Details

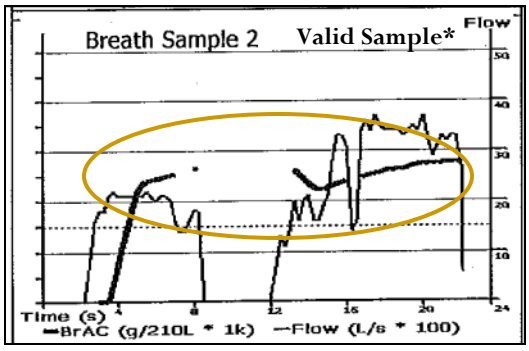
Test	g/210L	Time
Air Blank	0.000	10:56:49
Diagnostics	Passed	10:57:25
Air Blank	0.000	10:58:02
Subject Sample	*	10:58:19
Air Blank	0.000	10:59:02

*Invalid Sample -
Invalid Sample. Possible residual mouth alcohol detected, wait 20 minutes before retesting.



***A rise followed by significant drop from peak BrAC during single exhalation is indicative of mouth alcohol and will be flagged as an Invalid Sample**

The proper function of the slope detector is verified during every quarterly inspection. Though effective in the majority of cases where significant levels of mouth alcohol exist, occasionally in these cases a subject's alcohol level will not drop a sufficient amount to cause the instrument's slope detector to flag it as Invalid. The risk of this occurring can be minimized by encouraging the subject to give a steady maximum exhalation.



***BrAC drops at beginning of 2nd attempt. This drop and then rise does not indicate mouth alcohol and will not be flagged as an Invalid Sample**

What if the breath profile shows a drop, does that mean there is mouth alcohol?

The BrAC profile is not intended to be used as a tool to visually identify mouth alcohol. **As seen in *Breath Sample 2* at right, not all drops in alcohol level during a test are associated with mouth alcohol, but can occur when a subject does not provide one continuous exhalation**.

3. **Replicate Samples.** The possibility residual or mouth alcohol affecting the Measured BrAC can be effectively eliminated by obtaining two consecutive samples from the same subject four or more minutes apart. Residual or mouth alcohol typically dissipates at a rate greater than or equal to about 50% every two minutes. This means that in the unlikely event that a subject is exposed to residual or mouth alcohol immediately prior to the test and that exposure goes undetected by both the operator and the instrument's slope detector, the five minutes between subject samples will give the residual or mouth alcohol time to dissipate by more than 75%. This dissipation will almost always cause the two consecutive sample readings to differ significantly and give a **No 0.020 Agreement** warning.

How should the operator conduct the 20 minute wait / deprivation period?

Prior to the test being performed, **all initial breath tests should be preceded by a 20 minute deprivation or waiting period**. During the 20 minute period immediately prior to the test the subject should be **deprived of alcohol** . It should be understood that depriving the subject of alcohol includes both preventing them from administering external sources of alcohol and monitoring them for obvious signs of internal exposure to alcohol through regurgitation into the oral cavity (i.e. vomiting). Practical ways to assure the subject is deprived of alcohol during the 20 minute wait are:

1. **Do not allow the subject to put any foreign object in the mouth within 20 minutes of the test**. This means preventing them from eating, drinking, smoking, chewing, and taking medication by mouth during the 20 minute Wait.
2. **Reasonably ensure the mouth is free of any foreign object** (gum, tobacco, food or drink), even though it is highly unlikely they will affect the alcohol reading.
3. **Monitor the subject for any overt signs of regurgitation, such as retching or vomiting**. This means that the subject should not be left unattended or unmonitored for any significant period of time during the 20 minute wait.

Ensuring that the 20 minute waiting period has been properly met is the operator's responsibility. Administering the 20 minute wait **does not require** that:

- **The operator administer the entire 20 minute wait.** It may be administered by other officers as long as its administration is verified by the operator.
- **The officer administering the 20 minute wait stare at the subject** continuously for 20 minutes. Staring at a subject is not necessary to determine if regurgitation has occurred.
- **The officer restart the 20 minute wait if burping or belching occurs** as long as regurgitation is not suspected. Burping or belching prior to the test in the absence of regurgitation of alcohol from the stomach will have no significant affect on the breath test results. If the operator suspects regurgitation may have occurred as the result of a burp, they should verify this with the subject and restart the 20 minute waiting period.
- **The entire 20 wait/ deprivation period be administered at the station**. The deprivation period can begin when the subject is in the control of the officer and it can be verified that they are continuously deprived of alcohol as described above. This includes the transport of the subject, **if** the officer transporting the subject can honestly testify that they were monitoring the subject for overt signs of regurgitation such as retching and vomiting during transport.

If regurgitation into the oral cavity or vomiting is suspected during the deprivation period, make a note of it. When the subject has recovered sufficiently, allow them to rinse their mouth with water and restart **the twenty (20) minute waiting period**. Allowing the subject to rinse their mouth after vomiting is a curtesy that should be extended to the subject, but is not required for conducting of the breath test should the subject refuse to do so.

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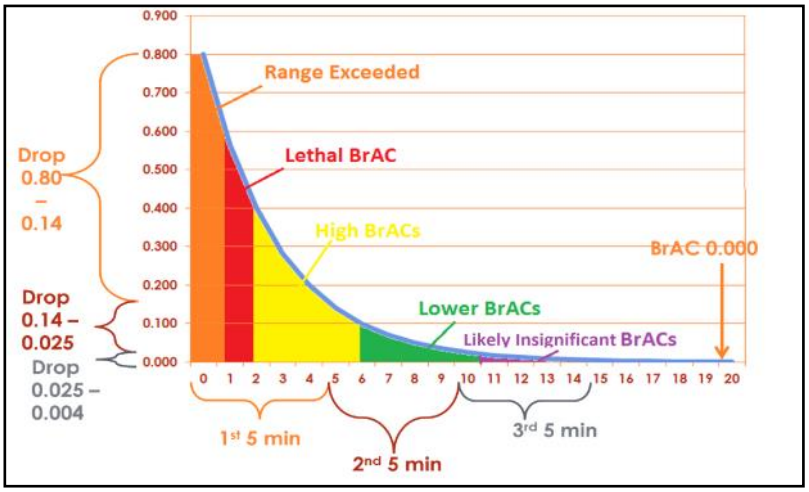
Dissipation of Mouth Alcohol—Illustration*



*The illustration at right represents a conservative model of the dissipation rate of mouth alcohol after exposure to alcohol at concentrations between 21% and 25% based on experiments conducted by GBI-DOFS (2005-2012). **As seen in this model, the alcohol concentration declines by about 50% every 2 minutes or <u>more than 75% every 5 minutes</u>.** Note that while the majority of subjects tested showed mouth alcohol dissipation significantly faster than the model at left, mouth alcohol dissipation rates can vary and can on occasion be slower than shown in the illustration.

4. **<u>Interferents -</u>**

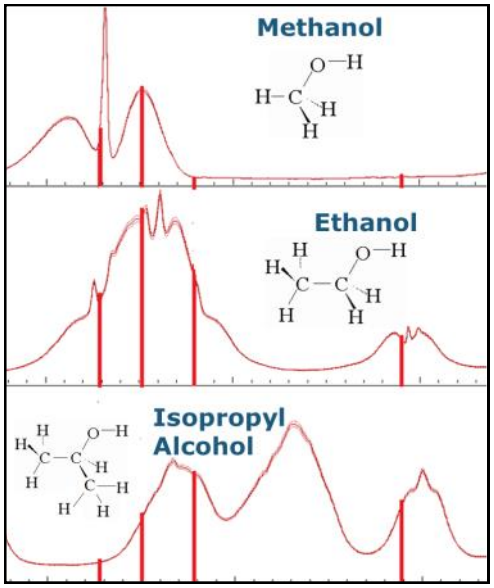
The Intoxilyzer 9000 is designed to uniquely identify and quantify ethanol in breath by analyzing the amount of absorption that occurs at four specific wavelengths of infrared radiation that correspond to absorption by ethanol's carbon — oxygen and carbon — hydrogen bonds. Accordingly, the **Intoxilyzer 9000 is highly selective for ethanol and there is very little risk that substances other than ethanol will affect the measured BrAC** because no other substance exhibits the exact same pattern of infrared light absorption. It is possible however, that some substances present in the human breath can potentially **interfere** with the instrument's ability to analyze ethanol because they absorb infrared radiation at the same wavelengths, albeit in a different pattern. If this limitation occurs, the Intoxilyzer 9000 <u>will not produce a printed BrAC</u>, but will abort the test and print an **Interferent Detected** warning on the breath test report.

What kind of substances could potentially be interferents?

In order to potentially **interfere** with the breath test a substance must meet three basic criteria:

- It must be present in the body in sufficient quantities to be detected by infrared analysis without being lethal.
- It must be volatile enough to partition into the breath in significant quantities.
- It must absorb infrared light at the same wavelengths as ethanol.

In reality, based on those criteria, there are no substances that are expected to occur in the breath of a normal healthy individual that would interfere with a breath test. It is possible however, through **abuse of volatile chemicals** or the **occurrence of serious medical conditions** such as ketosis, that a subject will have enough interferent present in the breath to produce a warning message.



Note ethanol's **unique pattern of absorption** at the four wavelengths analyzed by the I9000 **represented by the red lines on the infrared spectrum at left. Any breath sample that produces an analytical response different than that of ethanol will be flagged as an Interferent**.

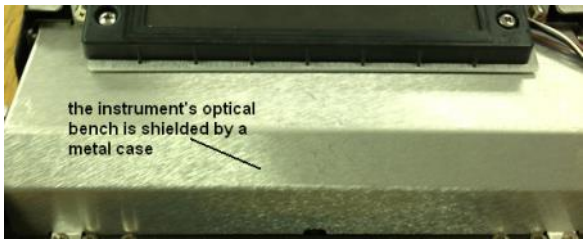
Even similar alcohols such as methanol and isopropyl alcohol show distinctly different patterns of absorption than ethanol. This means they will be flagged as **Interferents** by the I9000 in the unlikely event they appear in significant quantities in a human breath sample.

In an evaluation of the specificity of the Intoxilyzer 9000 conducted by GBI-DOFS, the pattern of absorption of ethanol in the 9 micron region was found to be unique when compared to the published infrared responses for over 80 common volatile compounds. **This ultimately means that the measured BrAC reported by the Intoxilyzer 9000 will not be significantly affected by substances other than ethyl alcohol.**

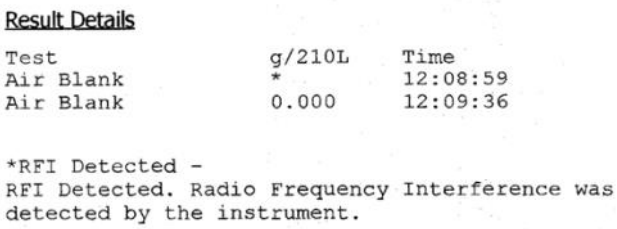
ENVIRONMENTAL CONDITIONS

1. **Radio Frequency Interference (RFI)** - It has been long understood that a sufficiently strong source of certain types of electromagnetic radiation could be used to induce a low level electrical current in metal objects such as wires or antennas. This in fact is the basis for wireless communication mediums such as radio, TV, and cellular phones. Unless amplified, normal electromagnetic signals in the ambient environment have little effect on most modern day electrical devices. In order to ensure that the instrument's electronics are not significantly affected by wireless transmissions in the testing environment, the Intoxilyzer 9000 employs both **RF shielding** and **RF detection**.
   - **RF Shielding** - As seen in the exhibit below, Intoxilyzer 9000's optical bench is completely encased in a metal box. This effectively **shields it from ambient electromagnetic radiation** and prevents radio frequency signals from devices such as police radios, cell phones, wireless routers, or Bluetooth transmitters from having any effect on electrical voltages produced by the detector.
   - **RF Detection** - As a secondary safeguard, the Intoxilyzer 9000 is also equipped with a **Radio Frequency (RF) detection circuit.** This circuit is designed to abort the test and alert the operator if strength of radio or wireless transmissions in the vicinity of the instrument exceeds a level set by the manufacturer. Thus, in order to avoid test interruption due to RF detection, operators should avoid unnecessary radio and wireless transmissions in the immediate vicinity of the instrument during the breath test.

RF Shielding



RF Detection



Result Details

Test	g/210L	Time
Air Blank	*	12:08:59
Air Blank	0.000	12:09:36

*RFI Detected -
RFI Detected. Radio Frequency Interference was detected by the instrument.

Note that the Intoxilyzer 9000's RF detection capability is verified during each quarterly inspection by utilizing a transmission from a standard police radio in close proximity to the instrument. Whether a particular wireless transmission will result in an RFI Detected warning is primarily a function of the radiated power of the transmitting device and its proximity to the instrument. While internal testing of the Intoxilyzer 9000 by the Division of Forensic Sciences has confirmed that wireless transmissions from various common sources will not influence the printed alcohol concentration, it is possible that transmissions from wireless devices such as cell phones may result in an RFI Detect warning. **Thus devices such as radios and cell phones should be turned off or placed into a non-transmitting state when in close proximity to the instrument if possible.** Body cameras, Bluetooth devices, and Wi-Fi networks have little risk of affecting evidential breath tests and do not typically need to be turned off. **Should an operator obtain an RFI Inhibit warning, they should locate the source and eliminate it.**

2. **Ambient Air** - As previously discussed, the Intoxilyzer 9000 uses air from the environment around the instrument to purge the breath sample pathway and sample chamber during the Air Blank. Provided this air is found to be alcohol free, it is then used as a zero alcohol reference or baseline for the following test. This essentially means that the reading produced by a subject sample or Dry Cal Chk is compared against the reading produced by the alcohol free reference to determine how much alcohol is present. Thus, if the ambient environment around the instrument contains a significant amount of alcohol or other chemicals, the Intoxilyzer 9000 will not be able to set the reference baseline at "true zero". This is why the Intoxilyzer 9000 is designed to abort the test and warn the operator if ambient environmental alcohol is detected. As seen in the following illustration, if the difference between the ambient air reading and "expected zero" **is larger than a predefined threshold**, the Air Blank will return an **Ambient Fail Warning**. In the unlikely event that alcohol exists in the instrument sample chamber at the conclusion of the Air Blank in a concentration below the "Ambient Fail" threshold, the Intoxilyzer 9000 will set the zero reference level at an alcohol concentration greater than zero. This effectively means that the following measurement will be lower than the actual value by the amount of alcohol remaining in the instrument at the end of the Air Blank. This should have minimal impact on subject test results, but as seen in the following example it may in

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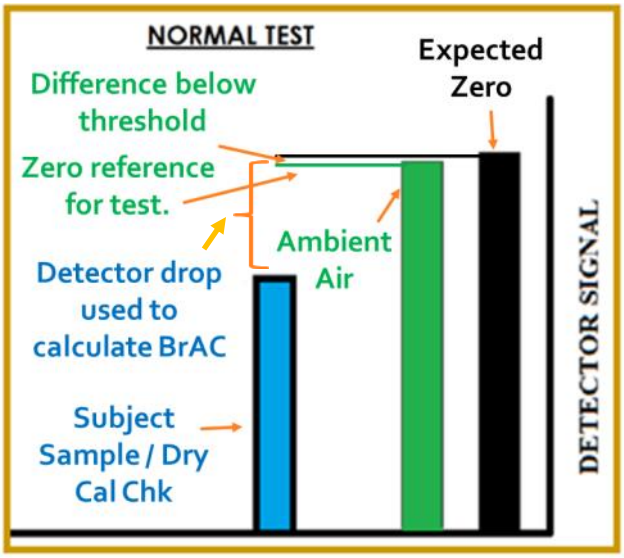
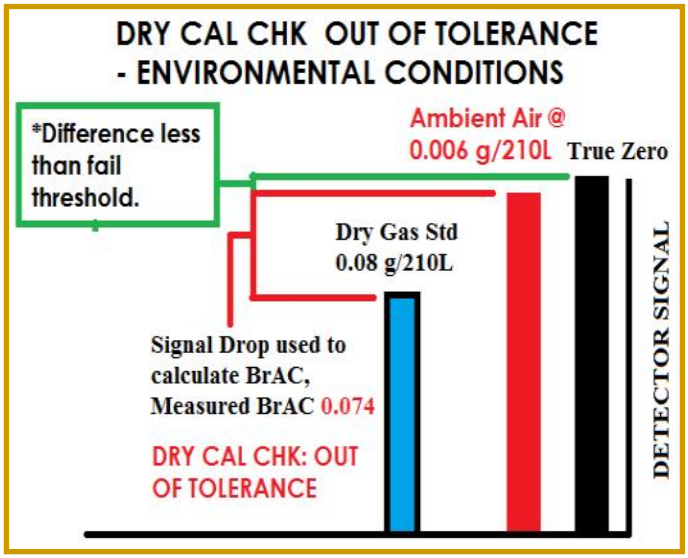
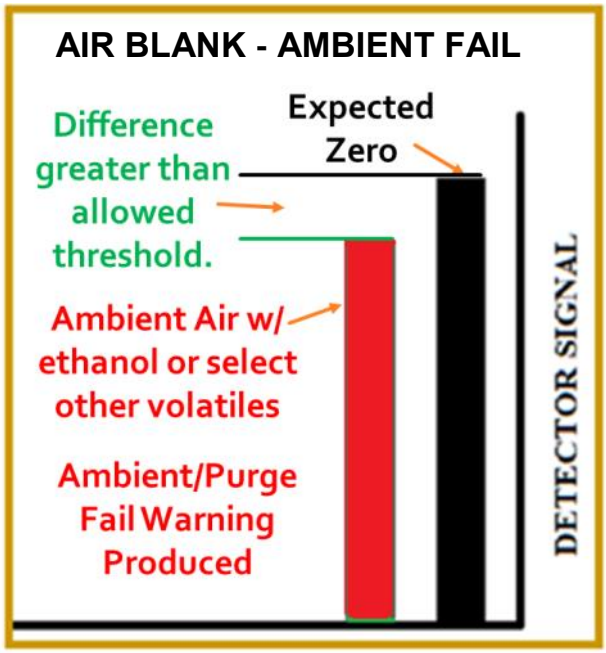




some instances cause the instrument's **dry gas calibration check to yield a value that is lower than the acceptable range** . Be aware that in some instances alcohol related **odors from a drinking subject in a confined space or in close proximity to the breath hose may be sufficient to produce this effect**, resulting in an **Ambient Fail** or an **Out of Tolerance warning** on the **Dry Cal Chk**. Failure to promptly remove the mouthpiece after a breath sample may also result in these warnings. **Should an operator see an Ambient Fail Warning they should attempt to ventilate the area around the instrument, visually verify that the breath pathway is not obstructed and attempt another test.** If the Intoxilyzer 9000 is able to successfully complete its air blank routine, then the ambient air around the instrument should have no significant effect on the subject's breath test result. **If the operator obtains a Dry Cal Chk Out of Tolerance warning, they should attempt to evaluate whether the environmental conditions were a contributing factor.**



*The three figures given here represent illustrative aids only and are not intended to be exact representations of instrument functions.

3. **Ambient Temperature** - Though the sample chamber temperature and internal temperature of the instrument are continuously monitored and regulated, it is important to only operate the Intoxilyzer 9000 within the recommended operating temperature range. The manufacturer's recommended operating range is from 0 degrees Celsius to 40 degrees Celsius or 32 to 104 degrees Fahrenheit. However, because the Georgia Model Intoxilyzer 9000 utilizes an optional dry gas ethanol standard, it is advisable to avoid exposure of the instrument to excessively high or low temperatures for extended periods of time. While extremely high temperatures can result in dangerous over pressurization of the gas tank, temperatures near freezing can cause temporary condensation issues. Thus to minimize any temperature related issues, it is recommended that the ambient temperature of the testing environment remain between **approximately 60° F and 93° F** . Ambient environmental temperature is evaluated for conformance to this range during the quarterly inspection. Additionally, Intoxilyzers installed in mobile testing environments or environments lacking climate control should be equipped with a thermometer so that the operator can verify the environmental temperature before testing. Under these specific conditions, best practice is to record the environmental temperature in the Additional Comments section of the Breath Test Report.

Instrument Condition

As stated earlier, all instruments should be operated with all of their parts attached and in good working order as prescribed by the manufacturer. The Intoxilyzer 9000 has very few external parts that can be detached; however there are numerous checks that verify the instrument's proper operation.

Element	Procedure	Performed by	Frequency	Document
Instrument Calibration (accuracy and precision)	• ISO 17025 calibration (checks calibration at multiple levels) • Quarterly Inspection (checks accuracy and precision at one level) • Ethanol Gas Standard (checks accuracy at 0.08 g/210L) • Instrument Diagnostics ITP (checks detector performance at a set level)	• CMI • Area Supervisor • Instrument • Instrument	• Initial purchase and as needed • Once per calendar quarter • After the first subject sample • Before each subject sample	• Calibration Certificate • Certificate of Inspection • Breath Test Report • Breath Test Report
Interferent Detection (selectivity or specificity for ethanol)	• CMI calibration procedure (checks acetone response) • Quarterly Inspection (checks ethanol/ methanol response)	• CMI • Area Supervisor	• Initial purchase and as needed • Once per calendar quarter	• Calibration Certificate • Certificate of Inspection
Slope/ Mouth Alcohol Detection	• Quarterly Inspection (checks mouth alcohol response)	• Area Supervisor	• Once per calendar quarter	• Certificate of Inspection
RFI Detection	• CMI calibration procedure (sets RFI sensitivity) • Quarterly Inspection (checks RFI response)	• CMI • Area Supervisor	• Initial purchase and as needed • Once per calendar quarter	• Calibration Certificate • Certificate of Inspection
Sample Pressure/ Flow Calibration	• CMI calibration procedure (calibrates flow sensor at 3 levels) • Quarterly Inspection (checks sample acceptance)	• CMI • Area Supervisor	• Initial purchase and as needed • Once per calendar quarter	• Calibration Certificate • Certificate of Inspection
Temperature Regulation	• CMI calibration procedure (verifies temperatures) • Quarterly Inspection (checks environmental conditions) • Instrument Diagnostics (checks hose, internal, and sample chamber temp)	• CMI • Area Supervisor • Instrument	• Initial purchase and as needed • Once per calendar quarter • Before every sample	• Calibration Certificate • Certificate of Inspection • Breath Test Report

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Summary of Limitation Safeguards

Issue	Description	Operator Safeguard	Instrument Safeguard
Residual or Mouth Alcohol	Occurs when alcohol concentrations in the mouth from recent exposure to ethanol exceed the alcohol concentration in the breath.	• Ensure the 20 minute wait is observed and the subject is deprived of alcohol for 20 min prior to the test. • It is best practice to ensure the mouth is free of foreign objects such as gum, cigarette smoke, and significant amounts of tobacco or food. • Look for any overt signs of regurgitation such a retching or vomiting.	• Monitors the slope of the BrAC profile during exhalation and prints **Invalid Sample** warning if slope requirement is not met. • Evaluates the agreement between replicate samples and gives **0.02 agreement warning** if not met. • If the BrAC value exceeds the instrument's analytical range it will print a **Range Exceeded** warning.
Insufficient Sample	Occurs when the subject does not provide a breath sample that meets the requirements for flow, volume, and level slope.	• Properly instruct the subject to take a deep breath and blow until told to stop. • Facilitate a maximum exhalation keeping the flow above the minimum as long as possible. • Assess medical or physical limitations to adequate breath samples.	• Ensures that the subject blows with a certain force and a certain total time or total volume. • Requires the subject to continue to blow until the BrAC is no longer significantly rising. • Prints **Insufficient Sample** if criteria are not met.
Instrument Working Properly	Operators must lay foundation that the instrument is in good working order as prescribed by the manufacturer.	• Observe instrument for proper operation. Verify question sequence, display messages, and test routine are normal. • Be aware of any environmental conditions that would prohibit optimal test conditions.	• Performs self diagnostic before every sample and prints **Diagnostic Fail** if criteria is not met. • Performs an ethanol dry gas check with every test and prints **Out of Tolerance** if criteria is not met. • Periodic inspection performed every calendar quarter.
Ambient Alcohol / "Carryover"	Occurs when the sample chamber can not be sufficiently purged of air containing alcohol or various other volatile chemicals.	• Make sure that the area around the instrument is well ventilated and free of any potential source of volatile chemicals or alcohol such as cleaners or spilled alcoholic beverages. • Be sure to remove the mouthpiece after every sample.	• Performs air blanks before and after every sample which purge the instrument with ambient air. Failure to purge sample chamber will result in an **Ambient Fail or Purge Fail** warning. • Low levels of ambient alcohol remaining after purge may cause an **Out of Tolerance** warning.
Radio Frequency Interference (RFI)	Occurs when a sufficiently strong source of radio frequency is detected by the instrument's RF detector.	• Refrain from using any radios in the immediate vicinity of the instrument during testing. • Turn off all cell phones and wireless devices when conducting a breath test if possible.	• Electromagnetically shielded against RFI. • Contains RFI antenna and detection circuit which will inhibit the test in the presence of significant RFI and produce **RFI Detected** warning.
Interferents / Volatile Chemicals	Occurs when there is a significant quantity of a volatile organic chemical in the subject's breath that is producing a response at the instrument's detector.	• Assess the subject and if volatile abuse is suspected request a blood test.	• Compares responses at four IR detectors to differentiate ethanol from other compounds. Gives **Interferent Detected warning** if other compounds are detected.

Summary of Common Instrument Display Messages (Part 1)

Message	Description	Common Causes	Recommended Actions
Invalid Sample	The instrument has detected a rise followed by a significant drop in the BrAC during a single exhalation.	• Residual or Mouth Alcohol	• Administer a new 20 minute deprivation period and then retest the subject. • If this problem persists, request a blood test.
Range Exceeded	The alcohol level in the breath sample is too high.	• Residual or Mouth Alcohol	• Administer a new 20 minute deprivation period and then retest the subject. • If this problem persists, request a blood test.
No 0.020 Agreement	The two samples provided by the subject differed by more than 0.020 g/210L.	• Low or inconsistent breath volumes • Residual or Mouth Alcohol	• Administer a new 20 minute deprivation period • Re-instruct the subject in how to provide a sufficient breath sample. • Re-test the subject while attempting to facilitate a maximum exhalation. • If second No 0.020 Agreement warning is obtained, a third breath test can not be performed. • Re-read Implied Consent and request a blood sample.
Insufficient Sample	The subject did not provide a breath sample that meets the requirements for flow, volume, and level slope.	• Medical or physical limitation in providing a sufficient sample • Intentional non-compliance with the operator's instructions.	• Assess the breath profile to determine whether the subject followed the instructions of the operator. • Ask the subject if they possess any medical conditions that would prevent them from complying with the operator's instructions. • Assess the stature of the subject.: Subjects who are elderly and are frail or of very small stature may have more difficulty providing the minimum required volume of air. • Verify that the subject still desires to voluntarily provide a breath sample. • Re-instruct the subject and request a second test. • If a second Insufficient message is obtained determine whether to request a blood test or charge the subject with a refusal.
Incompatible Software Version	The software version couldn't be verified during the Instrument Diagnostics.	• The software was busy at the time the Diagnostic was performed.	• Allow the instrument a few minutes to come ready and attempt another diagnostic.

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Summary of Common Instrument Display Messages (Part 2)

Message	Description	Common Causes	Recommended Actions
Diagnostic Fail	One of the instrument's internal checks did not return the expected result.	• The instrument did not sufficiently warm up before running the self diagnostic • RFI detected during diagnostic. • Depending on the nature and frequency, maintenance may be needed.	• Allow the instrument to warm up for an additional 10 to 20 minutes. • If the problem occurs again after the additional warm up time and the cause can't be identified, put an out of service sign on the instrument and contact your local area supervisor.

Dry Cal Chk—Out of Tolerance	The measurement from the ethanol gas standard is not within +/- 0.005 g/210L of the target value.	• Environment -
		  • Low level ambient alcohol.
		  • Improper ventilation during Air Blank.
		  • Failure to remove mouthpiece during Air Blank.
		• Dry Gas Delivery -
		  • Improper tank installation.
		  • Tank pressure too low,.
		  • Leak/Obstruction in gas pathway.
		• Instrument is in need of calibration or repair.
			• Verify environmental conditions.
			• Check tank pressure and installation and if necessary change tank. Force the instrument to initiate another dry gas check from the tank installation screen and if it passes attempt another test. **(Note: The I9000 will remain locked until this is done)**
			• If a second consecutive warning is obtained, change tanks. If the same warning is then obtained from a different tank put an out of service sign on the instrument and contact your local area supervisor for instructions.

ITP Out of Tolerance	The ITP check portion of the Self Diagnostic did not return a result within the expected range.	• Instrument not completely stabilized at time of diagnostic. • Source/Detector settling or burn-in.	• Allow the instrument a few minutes to stabilized and attempt another diagnostic • If the condition persists and can not be corrected, contact the area supervisor for ITP adjust or further evaluation.
Ambient Fail / Purge Fail	The sample chamber can not be sufficiently purged of air containing alcohol or various other volatile chemicals.	• The area around the instrument contains some source of alcohol or volatile chemicals such as cleaners. • The breath sample pathway is obstructed. • Improper ventilation / mouth piece not removed promptly	• Check the area around the instrument for potential sources of volatile environmental chemicals. • Ventilate the area and retest the subject. • If the conditions persists and can not be corrected, put an out of service sign on the instrument and contact your local area supervisor.
RFI Detected	A strong source of radio frequency was detected by the instrument.	• Police radio transmission. • Intermittent transmissions from cell phones or wireless recording devices.	• Locate the source of the RF, eliminate it and retest the subject. • Turn off all cell phones and wireless devices if possible.
Interferent Detected	A substance other than ethyl alcohol was detected in the subject's breath.	• Volatile or inhalant abuse • Metabolic or Diabetic ketosis • Foreign object in the subject's mouth	• Assess the subject, re-read implied consent and request a blood test.

Appendix A

Rules
of the
Georgia Bureau of Investigation

Chapter 92-3
Implied Consent

Rev. January 23, 2013

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RULES OF THE GEORGIA BUREAU OF INVESTIGATION

CHAPTER 92-3

IMPLIED CONSENT

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92-3-.01 Application; Information.

(1) This chapter applies to chemical analysis of a person's blood, breath or urine for the purpose of determining whether such person is under the influence of alcohol or drugs where such tests are required or authorized under the laws of this state. It does not apply to analysis of breath, blood or other bodily substances for other purposes, including, but not limited to, those:

(a) Performed in conjunction with a postmortem examination;
(b) Conducted by personnel employed by the Division of Forensic Sciences or by personnel employed by an agency of the United States;
(c) Performed pursuant to a court order;
(d) Performed as a condition of probation, parole or pretrial release;
(e) Performed for the purpose of determining paternity;
(f) For initial breath alcohol screening;(except where explicitly addressed)
(g) For the purpose of preliminary testing for alcohol or drugs by law enforcement before submission of samples to a laboratory for confirmatory testing;
(h) For DNA analysis; or
(i) For the purpose of medical diagnosis or treatment.

(2) Requests concerning the rules or laws administered by the Georgia Bureau of Investigation, Division of Forensic Sciences relative to the methods approved for breath, blood or urine analysis, pursuant to this Chapter, shall be made in writing to the Director,Division of Forensic Sciences of the Georgia Bureau of Investigation.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Information" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. Aug. 31, 1998; eff. Sept. 20, 1998. **Amended:** Rule retitled "Application; Information". F. Feb. 24, 2000; eff. Mar. 15, 2000. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010.

92-3-.02 Qualifications. Amended.

(1) Pursuant to this chapter applicants for a permit to perform chemical analysis of a person's blood for alcohol content and report the results of such analysis as delineated in O.C.G.A. § 40-6-392 shall meet the following requirements:

(a) Be employed by an entity that is accredited in the area of forensic blood alcohol analysis by a nationally recognized accrediting body;
(b) Have never been convicted of a crime involving moral turpitude;
(c) Have completed a baccalaureate or advanced degree in chemistry, toxicology, medicine, pharmacology, or forensic science, including a minimum of 40 semester hours of chemistry related coursework;
(d) Have completed a documented training program in the area of blood alcohol analysis that includes the following elements:

1. Theory of alcohol pharmacology and pharmacokinetics;
2. Principles and theory of analytical techniques for blood alcohol analysis, e.g., head space gas chromatography and/or enzymatic methods;
3. Analysis of samples with known blood alcohol content using gas chromatography, enzymatic methods, or other generally accepted techniques;
4. Successful completion of proficiency test samples from the National Highway Transportation Safety Administration (NHTSA) and/or proficiency test samples from a test provider approved by the entity's accrediting authority described in 92-3.02(1)(a).

(e) Be an active participant in an ongoing external proficiency testing program.

(2) Applicants for a permit to perform chemical analysis of a person's breath pursuant to this Chapter shall meet the following requirements:

(a) be a citizen of the United States;
(b) be a resident of the State of Georgia or be employed within the State of Georgia;
(c) have never been convicted of a crime involving moral turpitude;
(d) be over twenty years of age;
(e) certified satisfactory completion of a course in breath analysis conducted under the auspices of the Division of Forensic Sciences.

(3) All peace officers qualified to make arrests on the highways or streets of this State shall be deemed, and are hereby declared, qualified to administer the screening test for alcohol in the breath. Screening tests are not intended to be a quantitative measure of the specific amount of alcohol in a person's breath, but a presumptive test for the presence or absence of alcohol. A list of approved breath alcohol screening devices will be maintained by the Division of Forensic Sciences.

(4) Pursuant to this chapter, applicants for a permit to perform chemical analysis of a person's blood or urine for drugs and report the results of such analysis as delineated in O.C.G.A. § 40-6-392 shall meet the following requirements:

(a) Be employed by an entity that is accredited in the area of toxicology analysis by a nationally recognized accrediting body;
(b) Have never been convicted of a crime involving moral turpitude;
(c) Have completed a baccalaureate or advanced degree in chemistry, toxicology, medicine, pharmacology, or forensic science, including a minimum of 40 semester hours of chemistry related coursework;
(d) Have completed a training program in the area of drug analysis from biological samples that includes the following elements:

1. Theory of drug pharmacology and pharmacokinetics;
2. Principles and theory of analytical techniques for drug analysis, including presumptive (e.g., immunoassay) and confirmatory techniques (e.g., gas chromatography/ mass spectrometry, liquid chromatography/ mass spectrometry/mass spectrometry);
3. Analysis of samples with known drug content using presumptive and confirmatory methods,
4. Successful completion of proficiency test samples from a test provider approved by the accrediting authority described in 92-3.02(4)(a). .

(e) Be an active participant in an ongoing external proficiency testing program.

(5) Applicants to perform, under supervision, chemical testing of a person's blood or urine for alcohol shall meet the following requirements:

(a) Be under the direct supervision of a person who possesses a valid permit to perform chemical tests as described in 92-3.02(1) and who is responsible for reviewing and reporting the results of all chemical tests performed by the applicant;
(b) Be a duly licensed registered nurse, certified medical technologist, or trained laboratory technician;
(c) Have completed a training program in the area of blood alcohol analysis that includes the following elements:

1. Principles and theory of analytical techniques for blood alcohol analysis, e.g., head space gas chromatography and/or enzymatic methods;
2. Analysis of samples with known blood alcohol content using gas chromatography, enzymatic methods, or other generally accepted techniques;
3. Successful completion of proficiency test samples provided by the National Highway Transportation Safety Administration (NHTSA) and/or proficiency test samples from a test provider approved by the entity's accrediting authority described in 92-3.02(1)(a).

(d) Be an active participant in an ongoing external proficiency testing program.

(6) Applicants to perform, under supervision, chemical testing of a person's blood or urine for drugs shall meet the following requirements:

(a) Be under the direct supervision of a person who possesses a valid permit to perform chemical tests as described in 92-3.02(4) and who is responsible for reviewing and reporting the results of all chemical tests performed by the applicant;
(b) Be a duly licensed registered nurse, certified medical technologist, or trained laboratory technician;
(c) Have completed a training program in the area of drug analysis from biological samples that includes the following elements:

1. Principles and theory of analytical techniques for drug analysis, including

presumptive (e.g., immunoassay) and confirmatory techniques (e.g., gas chromatography/ mass spectrometry, liquid chromatography/ mass spectrometry/mass spectrometry);
2. Analysis of samples with known drug content using presumptive and confirmatory methods;
3. Successful completion of proficiency test samples provided by a recognized test provider approved by the entity's accrediting authority described in 92-3.02(4)(a). .

(d) Be an active participant in ongoing external proficiency testing program.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Qualifications" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. Aug. 9, 1988; eff. Aug. 29, 1988. **Amended:** F. Nov. 18, 1995; eff. Dec. 8, 1995. **Amended:** F. Feb. 24, 2000; eff. Mar. 15, 2000. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010.

92-3-.03 Application, Form of. Amended.

(1) Applications for permits to perform chemical analyses of a person's blood or breath pursuant to this Chapter shall be on a form prescribed and approved by the Georgia Bureau of Investigation and shall be submitted to the Division of Forensic Sciences, Implied Consent Section.

(2) Each applicant shall provide as a minimum the following data:

(a) the name of the individual seeking the permit;
(b) the email address, telephone number, fax number and mailing address of the individual seeking the permit;
(c) the name and mailing address of the applicant's employer, or if self-employed, the name and mailing address under and by which the applicant transacts business;
(d) place and date of the applicant's birth;
(e) the resident address of the applicant;
(f) responses to all questions or requests for information in the application;
(g) date of the application.

(3) Where the application is for a permit to perform chemical analyses of a person's blood or urine, the applicant shall provide the documentation necessary to demonstrate that the applicant has met all applicable qualifications.

(4) Where the application is for a permit to perform chemical analyses of a person's blood or urine the applicant shall identify the specific methods and techniques to be employed in the performance of the analyses.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Application, Form of" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. June 10, 1987; eff. June 30, 1987. **Amended:** F. Nov. 18, 1995; eff. Dec. 8, 1995. **Amended:** F. Feb. 24, 2000; eff. Mar. 15, 2000. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010.

92-3-.04 Permits. Amended

(1) Permits to perform chemical analyses of a person's blood, urine, or breath pursuant to this Chapter will be issued by the Georgia Bureau of Investigation, Division of Forensic Sciences, Implied Consent Section.

(2) The Georgia Bureau of Investigation, Division of Forensic Sciences shall withhold the issuance of a permit where the application reveals information that the applicant has not or cannot qualify pursuant to Rule 92-3-.02.

(3) Separate and distinct permits shall be issued for:

(a) analysis and reporting of blood alcohol levels
(b) testing and reporting breath alcohol levels;
(c) analysis and reporting of drugs in blood and/or urine
(d) analysis of blood alcohol under supervision
(e) analysis of drugs in blood and/or urine under supervision.

(4) All permits are subject to revocation as provided by law and Rule 92-3-.08.

(5) Applications for all permits shall be filed with the Division of Forensic Sciences Implied Consent Section. Permits shall be valid for not more than four years from the date of issuance. Proof of successful completion of annual proficiency tests shall be required to maintain all permits for testing blood or urine for alcohol or drugs.

(6) Permit renewals to perform chemical analyses on a person's breath shall not be approved unless one refresher course in breath alcohol analysis conducted under the auspices of the Division of Forensic Sciences has been satisfactorily completed. Individuals possessing permits that are more than one year past the expiration date will not be allowed to renew their permits by attending a refresher course unless specifically authorized by the Director of the Division of Forensic Sciences or his or her designee. Additional refresher courses may be required at the discretion of the Director of the Division of Forensic Sciences.

(7) Existing permit holders may obtain a permit to operate instruments approved pursuant to this rule by the Division of Forensic Sciences for the chemical analysis of a person's breath by successfully completing a transition course in breath alcohol analysis under the auspices of the Division of Forensic Sciences.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Permits" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. Nov. 18, 1995; eff. Dec. 8, 1995. **Amended:** F. Feb. 24, 2000; eff. Mar. 15, 2000. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010. **Amended:** F. Jan. 3, 2013; eff. Jan. 23, 2013.

92-3-.05 Form of Permit

Permits issued by the Division of Forensic Sciences authorizing individuals to perform chemical analyses of a person's blood, urine, or breath pursuant to this Chapter shall be in a form approved by the Division of Forensic Sciences. Permits will indicate the individual approved to perform analysis, an issue and expiration date, and the type of analysis approved to perform, i.e., breath alcohol, blood alcohol, or blood and urine drug testing. In addition the permit will clearly indicate whether testing must be performed under supervision. In the case of breath analysis the type of instrument approved for use will also be indicated.

(a) Form deleted.
(b) Form deleted.
(c) Form deleted.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Forms of Permit" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. Feb. 24, 2000; eff. Mar. 15, 2000. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010.

92-3-.06 Techniques and Methods. Amended.

(1) Reserved

(2) All chemical tests on blood and/or urine not performed by Georgia Bureau of Investigation personnel must be performed on instruments approved by the Director of the Division of Forensic Sciences. Requests for approval of instruments to perform chemical testing of blood and urine along with proposed maintenance guidelines will be submitted to the Director of the Division of Forensic Sciences or his or her designee. Approval of such request is at his or her discretion pursuant to O.C.G.A. § 40-6-392. Upon approval of any testing instrument for the analysis of blood and/or urine a certificate of approval shall be issued detailing the agency, the date approved, the instrument serial number, and the date of the approval expiration. Such certificate shall be self authenticating and evidence that the instrument was approved by the Division of Forensic Sciences as required by O.C.G.A. § 40-6-392. Such approval shall not apply when any substantial modification to the instrument's original design has been made such that it no longer has all its parts attached and in working order as prescribed by the manufacturer or when the instrument is not in substantial compliance with the maintenance guidelines submitted. Failure to maintain testing instruments as stated in the guidelines for instrument maintenance may be considered grounds for revocation of the certificate of approval. Factors evaluated in the approval of maintenance guidelines for testing instruments shall include but are not limited to:

(a) Documentation of substantial compliance with the manufacturer's recommendations for maintenance;
(b) Documentation of all maintenance performed including the date, action taken, the individual performing the maintenance, and the results of the maintenance including acceptable performance of known quality control samples following such maintenance;
(c) Documentation that instrument maintenance is performed by individuals sufficiently trained to perform instrument maintenance;
(d) Documentation that the instrument has all its parts attached and in good working order as prescribed by the manufacturer;
(e) Documentation that the instrument is suitable for the purpose for which it is being used;
(f) Documentation of quality control measures to ensure reliable analysis such as positive and negative controls;
(g) Documentation that the instrument exhibits the sensitivity, resolution, and specificity necessary for its intended purpose and is evaluated for suitability prior to use.

(3) Types of instruments considered for confirmatory testing of blood or urine for drug content include gas chromatography mass spectrometry, gas chromatography tandem mass spectrometry, liquid chromatography mass spectrometry, liquid chromatography tandem mass spectrometry, or other comparable structural elucidation technique as determined by the Director of the Division of Forensic Sciences or his or her designee.

(4) Types of instruments considered for testing of blood for alcohol content include head space gas chromatograph, fluorescence polarization immunoassay, cloned enzyme donor immunoassay, enzyme immunoassay, or other comparable technique as determined by the Director of the Division of Forensic Sciences or his or her designee.

(5) Breath tests other than the original alcohol-screening test shall be conducted on a breath alcohol analyzer approved

by the Director of the Division of Forensic Sciences or his or her designee. Any other type of breath alcohol analyzer not specifically listed in this paragraph must be approved by the Director of the Division of Forensic Sciences or designee prior to its use in the State.

(a) The Intoxilyzer Model 5000 manufactured by CMI, Inc. is an approved instrument for breath alcohol tests conducted on or before December 31, 2015;

(b) The Intoxilyzer Model 9000 manufactured by CMI, Inc. is an approved instrument for breath alcohol tests conducted on or after January 1, 2013;

(6) All breath tests other than the original alcohol-screening test will be performed in accordance with Rule 92-3-.02(2) of these regulations. The operator's permit will be conspicuously displayed in the room and in the immediate vicinity of the place where the test is conducted, or the operator will have on his or her person or immediate possession for display upon request a valid permit in accordance with Rule 92-3-.02(2).

(7) All blood and urine drug tests will be performed by the Georgia Bureau of Investigation, Division of Forensic Sciences or by entities specifically approved by the Director of the Division of Sciences for this purpose. All entities approved by the Division of Forensic Sciences to perform chemical analyses of blood and urine for drugs shall be accredited by a nationally recognized accrediting body. A list of all entities approved for the purpose of conducting chemical tests for drugs will be kept on file at the Georgia Bureau of Investigation to be made available upon request. Approval of entities to perform chemical tests of blood or urine for drugs shall be at the discretion of the Director of the Division of Forensic Sciences or his or her designee. Such approval shall not apply when any substantial change to the method submitted has been made or when any person executing such method fails to substantially comply with the method as written when submitted for approval. Entities requesting approval to perform chemical tests of blood and/or urine for drugs must submit all methods used for chemical testing under O.C.G.A. § 40-6-392 as well as accompanying calibration procedures and validation documents. All blood and urine drug testing methods submitted to the Division of Forensic Sciences for approval shall be evaluated for the following:

(a) Whether the method is suitable for the purpose for which it was submitted;

(b) Whether the method employs a minimum of two analytical techniques for positive identification of an analyte where at least one of the techniques is structurally elucidating (e.g., gas chromatography/ mass spectrometry, liquid chromatography/ mass spectrometry or liquid chromatography/ mass spectrometry/mass spectrometry);

(c) Whether the method includes quality control measures to ensure reliable analysis such as positive and negative controls;

(d) Whether the method's accuracy and measurement uncertainty for quantification meet acceptance criteria as determined by the Director of the Division of Forensic Sciences or his or her designee. These acceptance criteria are based on minimum acceptability requirements set forth for the Division of Forensic Sciences and will be made available to the applicant agency on request;

(e) Whether the method's working range for quantification includes the relevant pharmacological concentrations for the analytes of interest;

(f) Whether the method is specific for the analytes of interest;

(g) Whether the method complies with a nationally recognized quality control standard such as ISO/IEC 17025.

(8) The Director, Division of Forensic Sciences:

(a) will cause each instrument used in the administration of breath tests to be checked periodically for calibration and operation and a record of the results of all such checks maintained;

(b) at his discretion may cause any operator administering breath tests to be checked for operating proficiency. Unsatisfactory operation proficiency checks shall be one of several criteria for permit revocation.

(9) All blood and/or urine alcohol tests will be performed in accordance with a quantitative Gas Chromatographic technique or any equivalent procedure comparable in accuracy to Gas Chromatography. Any method used by an entity other than the Division of Forensic Sciences will be evaluated for approval by the Director of the Division of Forensic Sciences or his or her designee and such approval shall be at his or her discretion. Upon approval of any testing method a certificate of approval shall be issued detailing the agency, the date approved, and the date of the approval expiration. Such certificate shall be self authenticating and evidence that the method submitted was approved by the Division of Forensic Sciences as required by law. Such approval shall not apply when any substantial change to the method submitted has been made or when any person executing such method fails to substantially comply with the method as written when submitted for approval. Entities requesting approval to perform blood and/or urine alcohol tests must submit all methods used for testing under O.C.G.A. § 40- 6-392 as well as accompanying calibration procedures and validation documents. Factors evaluated in the approval of testing methods by outside agencies shall include:

(a) Whether the method is generally accepted in the scientific community for the purpose for which it is being submitted;

(b) Whether the method employs replicate analysis;

(c) Whether the method includes quality control measures to ensure reliable analysis such as positive and negative controls;

(d) Whether the method's accuracy and measurement uncertainty for quantification meet acceptance criteria as determined by the Director of the Division of Forensic Sciences or his or her designee. These acceptance criteria are based on minimum acceptability requirements set forth for the Division of Forensic Sciences and will be made available to the applicant agency on request;
(e) Whether the method's working range for quantification includes all alcohol levels between 0.02 and 0.40 g/dL of blood or equivalent;
(f) Whether the method is specific for ethanol;
(g) Whether the method complies with a nationally recognized quality control standard such as ISO/IEC 17025.

(10) The Director of the Division of Forensic Sciences, at his discretion, may require any person authorized to perform chemical tests and/or report results of such testing of blood or urine to divide a specimen and after analysis submit it to the Director, with his report of the specimen. Alternatively, the Director may submit a sample of known alcohol or drug content to any person holding a permit to analyze blood or urine or require them to participate in an external proficiency testing program of his or her choice at his or her discretion. The failure to submit a sample or to satisfactorily analyze a specimen on request will be one of several criteria for revocation of a permit.

(11)Except as forbidden by law, a report of every evidential breath test, excluding initial alcohol-screening tests, shall be made by the individual authorized to issue such reports.

(12)(a) The methods approved by the Division of Forensic Sciences for conducting an evidential breath alcohol analysis shall consist of the following:
(1) the analysis shall be conducted on an approved instrument as defined in 92-3-.06 (5).
(2) the analysis shall be performed by an individual holding a valid permit, in accordance with Rule 92-3-.02 (2); and
(3) the testing instrument shall have been checked periodically for calibration and operation, in accordance with Rule 92-3-.06 (8)(a);

(b) Administrative, procedural, and/or clerical steps performed in conducting a test shall not constitute a part of the approved method of analysis.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Techniques and Methods" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. Sept. 19, 1994; eff. Oct. 9, 1994. **Amended:** F. Nov. 9, 1994; eff. Nov. 29, 1994. **Amended:** F. Nov. 18, 1995; eff. Dec. 8, 1995. **Amended:** F. Nov. 12, 1997; eff. Dec. 2, 1997. **Amended:** F. Feb. 24, 2000; eff. Mar. 15, 2000. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010. **Amended:** F. Jan. 3, 2013; eff. Jan. 23, 2013.

92-3-.07 Fees and Billing. Amended.

The fee charged for the withdrawal of a person's blood pursuant to the O.C.G.A. 40-5-55 and 40-6-392 shall not exceed the reasonable and customary charges for such service in the local medical community. All statements for such services shall be submitted to and paid by the jurisdiction (municipal corporation or political subdivision) in which the arrest or accident giving rise to such a procedure occurred.

Authority O.C.G.A. Sec. 40-6-392, 27-3-7, 52-7-12, 6-2-5.1, 35-3-154(1). **History.** Original Rule entitled "Fees and Billing" was filed on April 11, 1986; effective May 1, 1986. **Amended:** F. May 27, 1993; eff. Jun. 16, 1993. Amended; F. February 24,2000; eff. March 15,2000.

92-3-.08 Revocation of Permit.

(1) The violation of any of the rules and regulations of the Georgia Bureau of Investigation promulgated under the provisions of the Uniform Rules of the Road by a permit holder shall constitute ground upon which the Director of the Division of Forensic Sciences may revoke such permit.

(2) If the Director of the Division of Forensic Sciences receives a complaint or has reason to believe that a permit holder is violating any provision of the rules and regulations, he shall notify such permit holder that a hearing will be held at a place and time designated by the Director to determine if the alleged infraction has occurred.

(3) The hearing shall be conducted by the Director of the Division of Forensic Sciences or by someone he shall designate.

(4) Upon revocation of a permit, the Director of the Division of Forensic Sciences or designee shall notify the permit holder, the permit holder's immediate supervisor and the Court(s) of the county or city where the permit holder is employed and in which the results of any tests performed by the permit holder could have been introduced as evidence.

Authority O.C.G.A. Secs. 6-2-5.1, 27-3-7, 35-3-154, 40-6-392, 52-7-12. **History.** Original Rule entitled "Revocation of Permit" adopted. F. Apr. 11, 1986; eff. May 1, 1986. **Amended:** F. Mar. 26, 2010; eff. Apr. 15, 2010.

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TABLE 1

Guide to Estimating Approximate Body Alcohol Concentration

Average Male Physiology – 17% Body Fat (Vd = 0.7L/kg)

	No.of standard drinks (0.6 oz ethanol: 5%-12 oz beers, 12%-5 oz wine)											
Weight (lb)	1	2	3	4	5	6	7	8	9	10	11	12
100	0.044	0.088	0.132	0.176	0.220	0.264	0.308	0.352	0.396	0.441	0.485	0.529
110	0.040	0.080	0.120	0.160	0.200	0.240	0.280	0.320	0.360	0.400	0.441	0.481
120	0.037	0.073	0.110	0.147	0.184	0.220	0.257	0.294	0.330	0.367	0.404	0.441
130	0.034	0.068	0.102	0.136	0.169	0.203	0.237	0.271	0.305	0.339	0.373	0.407
140	0.031	0.063	0.094	0.126	0.157	0.189	0.220	0.252	0.283	0.315	0.346	0.378
150	0.029	0.059	0.088	0.117	0.147	0.176	0.206	0.235	0.264	0.294	0.323	0.352
160	0.028	0.055	0.083	0.110	0.138	0.165	0.193	0.220	0.248	0.275	0.303	0.330
170	0.026	0.052	0.078	0.104	0.130	0.155	0.181	0.207	0.233	0.259	0.285	0.311
180	0.024	0.049	0.073	0.098	0.122	0.147	0.171	0.196	0.220	0.245	0.269	0.294
190	0.023	0.046	0.070	0.093	0.116	0.139	0.162	0.185	0.209	0.232	0.255	0.278
200	0.022	0.044	0.066	0.088	0.110	0.132	0.154	0.176	0.198	0.220	0.242	0.264
210	0.021	0.042	0.063	0.084	0.105	0.126	0.147	0.168	0.189	0.210	0.231	0.252
220	0.020	0.040	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200	0.220	0.240
230	0.019	0.038	0.057	0.077	0.096	0.115	0.134	0.153	0.172	0.192	0.211	0.230
250	0.018	0.035	0.053	0.070	0.088	0.106	0.123	0.141	0.159	0.176	0.194	0.211
270	0.016	0.033	0.049	0.065	0.082	0.098	0.114	0.131	0.147	0.163	0.179	0.196
290	0.015	0.030	0.046	0.061	0.076	0.091	0.106	0.122	0.137	0.152	0.167	0.182

Average Female Physiology – 29% Body Fat (Vd = 0.6 L/kg)

	No.of standard drinks (0.6 oz ethanol: 5%-12 oz beers, 12%-5 oz wine)											
Weight (lb)	1	2	3	4	5	6	7	8	9	10	11	12
100	0.051	0.103	0.154	0.206	0.257	0.308	0.360	0.411	0.463	0.514	0.565	0.617
110	0.047	0.093	0.140	0.187	0.234	0.280	0.327	0.374	0.421	0.467	0.514	0.561
120	0.043	0.086	0.128	0.171	0.214	0.257	0.300	0.343	0.385	0.428	0.471	0.514
130	0.040	0.079	0.119	0.158	0.198	0.237	0.277	0.316	0.356	0.395	0.435	0.474
140	0.037	0.073	0.110	0.147	0.184	0.220	0.257	0.294	0.330	0.367	0.404	0.441
150	0.034	0.069	0.103	0.137	0.171	0.206	0.240	0.274	0.308	0.343	0.377	0.411
160	0.032	0.064	0.096	0.128	0.161	0.193	0.225	0.257	0.289	0.321	0.353	0.385
170	0.030	0.060	0.091	0.121	0.151	0.181	0.212	0.242	0.272	0.302	0.333	0.363
180	0.029	0.057	0.086	0.114	0.143	0.171	0.200	0.228	0.257	0.286	0.314	0.343
190	0.027	0.054	0.081	0.108	0.135	0.162	0.189	0.216	0.243	0.271	0.298	0.325
200	0.026	0.051	0.077	0.103	0.128	0.154	0.180	0.206	0.231	0.257	0.283	0.308
210	0.024	0.049	0.073	0.098	0.122	0.147	0.171	0.196	0.220	0.245	0.269	0.294
220	0.023	0.047	0.070	0.093	0.117	0.140	0.164	0.187	0.210	0.234	0.257	0.280
230	0.022	0.045	0.067	0.089	0.112	0.134	0.156	0.179	0.201	0.223	0.246	0.268
250	0.021	0.041	0.062	0.082	0.103	0.123	0.144	0.164	0.185	0.206	0.226	0.247
270	0.019	0.038	0.057	0.076	0.095	0.114	0.133	0.152	0.171	0.190	0.209	0.228
290	0.018	0.035	0.053	0.071	0.089	0.106	0.124	0.142	0.160	0.177	0.195	0.213

USEFUL LINKS AND DOCUMENTS

Below is a list of documents and links that may be useful to the Intoxilyzer 9000 operator.

Training and Contact information can be found at the site below:

http://dofs.gbi.georgia.gov/implied-consent-0

Breath Alcohol Testing Basic Class Information
Information about obtaining a permit to conduct breath tests and registration for the Intoxilyzer 9000 Basic Class.

Breath Alcohol Testing Refresher Class Information
Here you will find information on how to renew your breath testing permit.

Intoxilyzer 9000 Transition Class Information
Information regarding the Intoxilyzer 9000 Transition Class for existing Intoxilyzer 5000 permit holders.

Contact Information
Here you will find important contact information for the Implied Consent section, Area Supervisors, and CMI.

Information on GBI-DOFS Procedures can be found at the link Below:

http://dofs.gbi.georgia.gov/dofs-quality-documents

Follow the link above and then choose the following folders Official Manual / Operations / Implied

OPSIC 05— Equipment Inspections:

Here you will find a list of approved dry gas ethanol standard vendors.

OPSIC 06— Alcohol Screening Devices:

Here you will find a list of PBTs approved by the GBI-DOFS

Answers to Frequently Asked Questions can be found at the link Below:

http://dofs.gbi.georgia.gov/implied-consent-faqs

Current copies of our manuals along with other useful information such as how to obtain Implied Consent cards and how to obtain a reprint of your operator's permit can be found at the link above.

Information on Other GBI-DOFS Documents can be found at the link Below:

Operations Bulletins

http://dofs.gbi.georgia.gov/operations-bulletins

These are important announcements from the Deputy Director of DOFS regarding operational issues at DOFS.

Downloads

http://dofs.gbi.georgia.gov/downloads

This site contains miscellaneous documents such as the original I9000 purchasing contract, various Intoxilyzer transition updates, DOFS Evidence Submission forms, and ordering information for Blood Alcohol Testing kits.

Information from the Department of Drivers Services can be found at the link Below:

Traffic Court Reference Manual 2012: http://www.dds.ga.gov/docs/business/tcrm%202012.pdf

Law Enforcement Guide to DDS forms: http://www.dds.ga.gov/docs/business/le_guide_ddsforms.pdf

Information from the Prosecuting Attorney's Council can be found at the link Below:

Case Law Update: http://www.pacga.org/site/content/40

Law Enforcement Guide to Open Records: http://www.pacga.org/site/content/315

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Georgia Bureau of Investigation
Division of Forensic Sciences

Certificate of Inspection

This breath-testing instrument, _____, was thoroughly inspected, tested, and standardized by the undersigned on _____ and all of its electronic and operating components prescribed by its manufacturer are properly attached and are in good working order.

Sworn to and subscribed before me this _____ day of _____ 20____.

_____
Notary Public

_____
Implied Consent Area Supervisor

APPENDIX

RECENT COURT DECISIONS AFFECTING DUI/ IMPLIED CONSENT LAW

Miranda and Implied Consent

237 Ga. App. 362; Scanlon v. State

Miranda not required prior to reading Implied Consent notice to subject in custody. Does not violate the constitutional right of due process and privilege against self incrimination. Also See 236 Ga. App. 868; State v. Lord & State v. Rosier and243 Ga. App. 232; State V. Coe, 237 Ga. App. 764; The State v. Moses

269 Ga. 222 (Supreme Court); Price v. State

Miranda warnings must be given before administering field sobriety evaluations on a subject considered **" in custody"**. The test of "in custody" is whether "a reasonable person in the suspect's position would have thought the detention would not be temporary".

245 Ga. App. 466; Arce v. State

The court held "The officer did not have to administer *Miranda* warning to defendant before administering the field sobriety tests during a routine roadside questioning, because defendant was not under formal arrest but exhibited many physical manifestations of intoxication amounting to probable cause to arrest."

Intoxilyzer and Refusals

237 Ga. App. 236; Komala v. State

Unless encumbered by a physical or medical limitation, a person submitting to the breathalyzer test may be considered to have refused to comply if an adequate breath sample has not been provided. "…the arresting officer testified unequivocally that (Komala) failed… to provide an adequate breath sample and that the instrument did not produce a printed alcohol concentration analysis, which was objective evidence of (her) refusal."

236 Ga. App. 632; Miles v. State

" A defendant's refusal to permit a chemical analysis to be made of his blood, breath, urine, or other bodily substance at the time of his arrest is admissible in evidence against him in any criminal trial." …silence in the face of a request to take such a test shall not be treated differently than a refusal.

246 Ga. App 423; Chamberlain v. State

After being read her Implied Consent rights, Chamberlain submitted to a breath test and on the first sample produced an adequate sample with a printed result. She failed to provide an adequate breath on the second sample and stated because of a respiratory infection could not blow sufficiently. Chamberlain then requested an independent blood test due to her inability to produce a second sufficient breath sample. The Appeals Court ruled the statute expressly provides that a refusal to give a subsequent sample shall not affect the admissibility of the results of any prior sample. The fact that Chamberlain **failed or refused** to provide a second sample, as requested by the State, did not affect the admissibility of the results of the first sample. But the State's test results were rendered inadmissible when Chamberlain was denied the right of an independent test without justification. After providing a breath sample sufficient to cause the breath-testing instrument to produce a printed alcohol concentration analysis on the state-administered breath test, Chamberlain was entitled to the blood test she requested. The unjustified failure to provide the test is a violation of the statute and precludes the State from introducing evidence regarding its test.

2008 Ga App Lexis 696 Thrasher v State A08A0538

It would make little sense to hold that the result of the first test was inadmissible due to the defendant's inability to immediately give a second breath sample when a complete refusal or failure to take a second test does not affect the admissibility of the results of the first sample.

266 Ga App 762 Collier v. State S04G1409

A suspect refusing to submit to a chemical test under the Implied Consent statute was coerced to provide a sample and thus the results of the test were suppressed. The police threatened the suspect by saying they would obtain a warrant and forcibly draw blood if the suspect did not comply with the Implied Consent request. The Implied Consent statute grants the suspect an opportunity to refuse to take a blood alcohol test.

(Note: OCGA 40-5-67.1 was amended in 2006 to read "(d.1) Nothing in this Code section shall be deemed to preclude the acquisition or admission of evidence of a violation of Code Section 40-6-391 if obtained by voluntary consent or a search warrant as authorized by the Constitution or laws of this state or the United States.")

2009 Ga App Lexis 26 State v Quezada A08A1803

The court ruled that simply asking someone a second time if they wanted to submit to a chemical test was not equivalent to coercion. "A police officer may attempt to persuade a suspect to rescind her initial refusal to submit to chemical testing, so as long as any procedure utilized by an officer in attempting to persuade a defendant to rescind his refusal is fair and reasonable." Note that simply telling the subject to blow into the instrument after a refusal was not considered "fair and reasonable." (See Howell v State)

266 Ga App 480 Howell v. State

After refusing to undergo chemical testing pursuant to an implied consent reading, Howell was placed in front of an Intoxilyzer 5000 and instructed to comply. The court found that Howell did not voluntarily rescind his refusal and that the state's test should be suppressed. "In order to be effective, a subsequent consent after a refusal must be made: (1) within a very short and reasonable time after the prior first refusal; (2) when the test administered upon the subsequent consent would still be accurate; (3) when the testing equipment is still readily available; (4) when honoring the request would result in no substantial inconvenience or expense to the police and (5) when the individual requesting the test has been in the custody of the arresting officer and under observation for the whole time since arrest." (See DPS v Seay A92A0826)

270 Ga App 301 The State vs. Simmons

The court found no basis to permit the withdrawal of consent to State testing once consent has been given and is an accomplished fact.

270 Ga App 709 Shaheed v. The State

This case vacated a conviction of DUI less safe where the conviction was based upon the refusal of the subject to submit to both the field sobriety evaluations and the chemical test. The appellate court ruled "Shaheed was a less safe driver solely on the smell of alcohol and his refusal to submit to field sobriety tests and chemical testing. Accordingly, because there was nothing from which the jury could have inferred that [Shaheed] was under the influence of [alcohol] to the extent that he was a less safe driver, such as additional evidence of his physical condition or conduct at the time of his arrest, his conviction…must be set aside." While "refusal to submit to chemical testing may be considered as positive evidence creating an inference that the test would show the presence of alcohol, it also does not create an inference that he had impaired driving ability as a result of drinking alcohol."

A05A1491 Hoffman v. The State.

Refusal to submit to field sobriety tests ... is admissible as circumstantial evidence of intoxication and together with other evidence would support an inference that the suspect was an impaired driver.

286 Ga App 712 Horne v State A07A1563

In this case Horne submitted to field sobriety but refused chemical testing. Horne then challenged the sufficiency of the evidence regarding his DUI conviction. The court ruled to prove impairment, the State may present evidence of three types: "(i) erratic driving behavior, (ii) refusal to take field sobriety tests and the breath or blood test, and (iii) the officer's own observations (such as smelling alcohol and observing strange behavior) and resulting opinion that the alcohol made it less safe for the defendant to drive. (i) Manner of driving. Where there is evidence, as here, that the defendant has been drinking, the manner of his driving may be considered on the question of whether he has been affected by alcohol to the extent that he is less safe to drive. (ii) Refusal to undergo tests. Horne's "refusal to submit to an alco-sensor test and to a later chemical test of [his] breath is circumstantial evidence of [his] guilt." Together with other evidence, such refusals "would support [the] inference that [Horne] was an impaired driver." (iii) Officer's observations and opinion. A police officer may give opinion testimony as to the state of sobriety of a DUI suspect and whether appellant was under the influence to the extent it made him less safe to drive

283 Ga App 814 State v Brookbank A06A2036

Trial court erred in suppressing defendant's refusal to submit to a breath test, as the implied consent notice given was substantially accurate and timely given, and irrespective of whether the refusal resulted from defendant's confusion, it nevertheless remained a refusal. The deputy explained the implied consent law to Brookbank, but Brookbank simply disagreed with the deputy's explanation. The court emphasized that the law does not require the arresting officer to ensure that the driver understands the implied consent notice and the officer was under no duty to give further warnings or instructions after the implied consent warning was given properly at the time of arrest.

286 Ga App 542 Stewart v State A07A0232

Because Detective Doyle read Stewart the implied consent notice in an accurate and timely fashion, that notice was valid irrespective of Stewart's claimed inability to understand it. As a result, even if Stewart's subsequent refusal to provide a breath sample resulted from a failure to comprehend the consequences of his conduct, it is nevertheless admissible against him. As the term "implied consent" indicates, "every driver's consent to a chemical test for intoxication is implied by law." Specifically, everyone who operates a motor vehicle in Georgia implicitly consents to the chemical testing of their bodily fluids in the event they are arrested for DUI, but they may revoke that consent by refusing to submit to such testing. In all cases the court is required to find only that the implied consent law was conveyed to the … driver. The State is under no duty to prove [that] the … driver fully understood his rights under [that] law. To hold otherwise, and allow an intoxicated driver's professed inability to understand the implied consent warning to vitiate either the implied consent or the revocation of it, would so undermine OCGA § 40-5-55 (a) as to render it meaningless. Indeed, such a holding would actually benefit most those drivers who pose the greatest threat on the road — i.e., those who are so impaired that, even though conscious, are unable to comprehend their circumstances.

Request for an attorney before submitting to an Implied Consent test

281 Ga 306 Rackoff v State (Ga Supreme)

DUI suspects are not entitled to consult with a lawyer before deciding whether to submit to a breath test under the Sixth Amendment or the Georgia Constitution.

Also see 209 Ga. App. 270; Bowman v. Palmour

244 Ga. App. 123; Fairbanks v. State

The court affirmed Fairbanks' conviction of DUI, holding that his repeated response that he wanted an attorney present each time the arresting officer asked if he would submit to a chemical test amounted to a refusal to submit to testing, authorizing the admission into evidence of his refusal.

253 Ga. App. 412, State v. Boger

The appellate court held that the trial court erred in excluding appellee's failure to submit to the alco-sensor test at the scene of the stop because appellee's refusal could not have been based on a belief that he was entitled to an attorney prior to taking the test. However, the court held that evidence as to the test provided at the police station should be suppressed, as appellee, misled by the police officer, believed that he was entitled to an attorney prior to submitting to such test.

Use of Blood/Urine Samples obtained pursuant to Implied Consent Law

228 Ga. App. 825; The State v. Jewell

Blood and urine samples taken from the suspect pursuant to the Implied Consent Law for the purpose of determining if the defendant is under the influence of alcohol or drugs cannot be used for prosecution of drug possession. "This court held that consent for one purpose does not mean for ANY purpose, and therefore the consent was not the product of an essentially free and unrestrained choice."

Certificates of Inspection Admissibility

224 Ga. App.890; Harmon v. State

The certificates required by OCGA 40-6-392 (f) are not "tests which generally are carried out during the course of the investigation of a crime", and, therefore, the certificates are "not the type of investigation-generated written scientific report subject to the discovery provisions of OCGA 17-7-211." Instead, these inspections are conducted without regard to the investigation of any particular crime or case, but are done to assure the breath-testing instruments are periodically inspected, tested, and standardized, and that all the electronic and operating components are properly attached and are in good working order. Accordingly, the trial court did not err in allowing the certificate of inspection to be introduced even though it was not provided to Harmon before trial.

236 Ga. App. 842; Andries v. State

…the trial court did not err in admitting photocopies of the certificates of inspection in this case. Officer testified that he was familiar with the documents and that he recognized them as photocopies of the original certificate posted next to the Intoxilyzer 5000 on which the defendant was tested. Also see 238 Ga. App. 442; Wright v. State

Operator's Permit

240 Ga. App. 461; Prindle v. State

Given the undisputed evidence that the officer conducting the test was trained to use the machine used here, took a refresher course on its use, and had a certificate that was valid on its face on the date of the test, we find that the state satisfied its burden of proving the officer had a valid permit.

MORE THAN TWO SEQUENTIAL BREATH TESTS

237 Ga. App. 817; Davis v. State

After providing two breath tests with adequate breath samples in which the results exceeded the 0.020 allowed difference. The subject was requested to take a third test which was within the 0.020 limit. The court ruled this test not admissible because OCGA 40-6-392 (a)(1)(B) provides only two tests with adequate breath samples can be requested.

INTOXILYZER OPERATING PROPERLY

225 Ga. App. 678; Renschen v. State

The state showed that the machine used was certified as being in good working order by the Division of Forensic Sciences of the Georgia Bureau of Investigation. The officer who performed the test on Renschen also testified that the machine was in good working order and was performing properly. This was sufficient to satisfy the statutes' requirements.

237 Ga. App. 875; Lanier v. State

"…the State introduced a certificate of inspection performed before the defendant's test and after the defendant's test showing the machine was operating properly. In addition, the operator testified that the instrument was operating properly at the time he performed the test on the defendant. …an inspection directly before and after each defendant's test is not required."

Smith v. The State A16A0746

Because an inspection certificate is not testimonial in nature, a defendant has no right to confront the inspector who produced it and the State need not produce the inspector as a witness at trial in order to introduce the certificates into evidence.

Intoxilyzer and *margin of error* (Sampling Variability)

248 Ga. App. 806; Bagwell v. State

The trial court did not err in denying his motion for a directed verdict on the per se charge. The Intoxilyzer's margin of error related to the weight given the test results rather than their admissibility, and the test results were direct evidence of guilt.

Also See 235 Ga. App. 791; Cawthon v. State

DUI Drugs

271 Ga. Supreme 398; Love v. State

The Court reversed appellant's conviction of driving with marijuana in his blood or urine, holding that the statute is an unconstitutional denial of equal protection. The Court held that the distinction between users of legal and illegal marijuana in the statute was arbitrarily drawn and was not directly related to the public safety purpose of the legislation.

272 Ga. Supreme 733; Ayers v. State

The court affirmed the trial court's refusal to dismiss criminal charges against Ayers, and held that the equal protection of law articulated in *Love v. State* does not preclude an indictment which charges reckless driving and first degree vehicular homicide through reckless driving where the reckless driving is based upon consumption of marijuana.

Sandlin v State A10A2197

The court ruled that Sandlin was not required to prove that he was legally entitled to use alprazolam in order to assert an equal protection challenge to 40-6-391 (a)(6) as articulated in Love v State.

248 Ga. App. 474; Keenum v. State

"Legal " cocaine use. Keenum was convicted of driving under the influence of drugs. On appeal, he contended that OCGA 40-6-391(a) (6) had been held unconstitutional by the Supreme Court in *Love v. State.* Affirming, the court held that while there could be instances of legal marijuana use, there would never be an instance of legal cocaine use so as to make the statute an unconstitutional denial of equal protection as to a cocaine intoxication charge.

302 Ga. App 753 Myers v State A10A0106

"DUI is a crime of general not specific intent. The state does not have to prove that the defendant intended to drive under the influence, only that the defendant was in an intoxicated condition and that she intended to drive...Voluntary intoxication is not an excuse for any criminal act."

Qualifications of person drawing blood

272 Ga. Supreme 169; Peek v. State

To be admissible the qualifications of the person drawing the blood must be proven by one of two ways. 1. The State may call as a witness the person who withdrew the blood and have that person testify as to his or her qualifications. (Harden v. State, 210 Ga. App. 673). 2. The State may produce a certification by the office of the Secretary of State or by the Department of Human Resources that a person was qualified to draw blood as required by OCGA 40-6-392.

{Statute was amended in 200l legislation to include the testimony under oath of the blood drawer's supervisor or medical records custodian that the blood drawer was properly trained and authorized to draw blood as an employee of the medical facility or employer.}

Challenge. Implied Consent Notice; OCGA 40-5-67.1; OCGA 40-5-55(a)

272 Ga. Supreme 605; Klink v. State; Watt v. State

The Court held that OCGA 40-5-67.1, that provides for the notice of implied consent to chemical testing, was not unconstitutional.

275 Ga. Supreme 309; Young v. State

The Court denied the motion to suppress the results of the state-administered breath tests based on the alleged unconstitutionality of the implied consent warning provision of OCGA 40-5-67.1. The implied consent warning did not violate the equal protection clause, as discriminating against persons charged with DUI, because it did not inform them that the results of a chemical test can be used against them at trial.

275 Ga. Supreme 283; Rodriguez v. State

The trial court did not err by failing to suppress the results of the state-administered blood alcohol tests because his implied consent warnings were not given to him in Spanish. Neither due process nor equal protection require the implied consent warnings to be given in a language the driver understands. (ref. State v. Tosar; 180 Ga. App.885.)

246 Ga. App. 344; Crawford v. State

The officer read the Implied Consent Notice before formally placing Crawford under arrest. After the rights were read to Crawford, she agreed to submit to an alcosensor evaluation. The test was positive for alcohol. The officer placed her under arrest and transported her to jail where she agreed to take the state administered breath test. Crawford appeals that the implied consent notice was not read at the time of arrest, and that because the officer read the notice just before asking her to take the alcosensor field test, she was confused and deprived of the right to make an intelligent decision whether she should take the state administered test. The Court held Crawford was not free to leave even before the administration of the alcosensor test, the reading of the notice was done at the "time of arrest" as required by the statute. The Court agreed with Crawford that the implied consent notice should not be read before the administration of the alcosensor test because that may mislead the driver into believing that he or she is required to submit to that test. The Court was not persuaded by Crawford's argument that the timing of the reading was so confusing that she was unable to make an intelligent decision about whether to submit to the state administered test. However, had she refused to take the state administered test, thereby suffering adverse consequences, she would have a better argument that she was confused about whether to submit to the state test.

277 Ga. Supreme 282; Cooper v. State

Cooper was convicted of DUI after submitting to a blood test that was administered because Cooper was involved in a traffic accident resulting in serious injuries. Reversing, the court held that to the extent that OCGA 40-5-55(a) requires chemical testing of a driver involved in an accident resulting in serious injuries or fatalities regardless of **probable cause**, it authorizes **unreasonable searches and seizures** in violation of the Georgia and United States Constitutions.

Hough v. State S05G0311 and Handschuh v. State S06G0640

The state may constitutionally require a suspect who has not yet been arrested to submit to a chemical test of his blood, breath, urine, or other bodily substances where the suspect has been involved in a traffic accident resulting in serious injuries or fatalities (as defined by 40-5-55) and the investigating law enforcement officer has probable cause to believe that the suspect was driving under the influence of alcohol or other drugs... in circumstances where there has been no traffic accident resulting in serious injuries or fatalities but the law enforcement officer has probable cause to believe that the suspect was driving under the influence of alcohol or other drugs, the suspect must be arrested prior to a reading of implied consent.

285 Ga App 18 State v. Austell A062171

Trial court properly granted defendant's motion to suppress the results of a chemical test of his blood based on the undue delay between his arrest, after a traffic stop, and the reading of his implied consent warnings.

The Trooper testified that he delayed reading Austell his rights because, with everything that had taken place, he felt that it would be safer for him to get Austell to the jail where it would be lighted, where others would be, rather than just reading Austell his rights on the interstate with only the two of them present. The trooper in this case was forced to subdue Austell due to the fact that he resisted arrest. The court opined that "although we are mindful of the difficulties the Trooper had with Austell, various opportunities existed for him to read Austell his rights before he did, and our law demands that the rights be read "at the time of arrest, or at a time as close in proximity to the instant of arrest as the circumstances of the individual case might warrant."

283 Ga App 872 Dunbar v State A07A0496

Approximately 25 minutes elapsed between the time the officer handcuffed Dunbar and the time the officer read her the implied consent notice. Dunbar argues that the 25-minute delay did not satisfy the requirement in OCGA § 40-6-392 (a) (4) to read the implied consent notice "at the time of arrest." However, the notice is deemed timely if it is given "at a time as close in proximity to the instant of arrest as the circumstances of the individual case might warrant." Here, the officer called a tow truck because he determined that neither occupant of Dunbar's vehicle was fit to drive. He therefore inventoried the vehicle before releasing it to the tow truck. He also evaluated the intoxicated passenger to rule out any safety threats posed by him or potential weapons in Dunbar's vehicle. As the tow truck arrived, and before transporting Dunbar to the sheriff's office, the officer read Dunbar the notice. In light of the circumstances of this case, we affirm the trial court's ruling that the delay in reading the implied consent notice was warranted.

285 Ga App 640 State v Underwood A07A0576

Because the trial court's finding that defendant was under arrest only for the possession of drug-related items at the time the implied consent notice was read to him, although probable cause existed to arrest him for DUI, its order excluding the results of the state-administered breath test was upheld on appeal.

296 Ga Supreme 822 Williams v State S14A1625

The Supreme Court of Georgia clearly distinguished a DUI suspect's "consent" for purposes of the Implied Consent statute from "actual consent" (which permits a warrantless search of a suspect's bodily fluids) under the Fourth Amendment and Georgia Constitution. *Williams* simply clarified that officers in the field must do two things to obtain consent to state-administered chemical testing: (1) observe the requirements of the Implied Consent statute, and (2) ensure that suspects consenting to chemical testing do so freely, voluntarily, and without unconstitutional coercion.

State v. Jung A16A0527

In determining whether the defendant gave actual consent to a state-administered breath test, the trial court is required to address "the voluntariness of the consent under the totality of the circumstances." Under Georgia law, "voluntariness must reflect an exercise of free will, not merely a submission to or acquiescence in the express or implied assertion of authority." In making this determination, we consider a number of factors, including "prolonged questioning; the use of physical punishment; the accused's age, level of education, intelligence, length of detention, and advisement of constitutional rights; and the psychological impact of these factors on the accused." And "no single factor is controlling." Our Supreme Court has also held that a high level of intoxication may be sufficient to support a trial court's finding that a statement *or consent* is involuntary. (See also State v Young A16A1435, State v. Domenge-Delhoyo A16A0362, State v. Williams A16A0509)

State v Depol A15A1947

Although Depol was under the influence of alcohol, the video clearly demonstrates that he was also capable of understanding what was said to him, able to freely and voluntarily consent, and actually did so. Accordingly, we reverse the trial court's grant of Depol's motion to suppress. In this case, we have reviewed the video of Depol's interactions with the deputies and conclude that it cannot support the trial court's observation that it shows "the Defendant was extremely impaired" and "without the ability to voluntarily consent to a search of his breath." While Depol sways slightly at times, it is clear from the video of his approximately 45–minute interaction with the officers that he was capable of exercising sufficient free will to consent to a breath test.

Bailey v State A16A0200

Bailey was unconscious when a state trooper arrived at the hospital. The state trooper ordered hospital staff to obtain samples of Bailey's blood and urine for drug and alcohol testing. The State, however, produced no evidence of exigent circumstances. For example, there was no evidence regarding how long the warrant process was expected to take and whether officers could have been seeking a warrant while Bailey was being transported to the hospital. In light of McNeely and Williams, Bailey's implied consent was insufficient to satisfy the Fourth Amendment, and he could not have given actual consent to the search and seizure of his

blood and urine, as he was unconscious. Because the State failed to demonstrate that exigent circumstances justified the warrantless search, the trial court erred in admitting into evidence the results of Bailey's blood and urine tests.

Independent Blood Test Request

245 Ga. App. 750; Joel v. State

Joel was stopped for DUI in Forsyth County and took the state-administered chemical test at the sheriff's office. He then asked to be taken to Northside Hospital in Atlanta for an independent test. The arresting officer, protesting that it would be "too dangerous for me to take him that far into metro Atlanta," took him to North Fulton Hospital for his blood test. Reversing the trial court's denial of Joel's motion to exclude the results of the state-administered test, the court held that Joel's statutory right to an independent test of his own choosing under OCGA 40-6-392 (a)(3) was violated when he was denied the right to a test at a facility of his choice that was "reasonably close."

Other cases: State v. Hughes; 181 Ga. App. 464, O'Dell v. State; 200 Ga. App. 655, Akin v. State; 193 Ga. App. 194.

254 Ga. App. 807; Hendrix v. State

Request for an additional test outside arresting officer's jurisdiction by 25-30 miles not reasonable considering officer offered to take suspect to **any local hospital** he wanted and that the requested facility would take 1 hour travel time round-trip. Factors considered when determining if a request is reasonable include: (1) availability of or access to funds or resources to pay for the requested test; (2) a protracted delay in giving of the test if the officer complies with the accused's requests; (3) availability of police time and other resources; (4) location of the requested facilities…and (5) opportunity and ability of the accused to make arrangements personally for testing.

255 Ga. App.685; State v. Braunecker

The appeals court affirmed the trial court's suppression of the state administered breath test and held the police denied appellant the opportunity to have an independent blood test. The appellant made the request to the booking officer while being photographed. The request was made 30 minutes after the breath test, the booking officer did not inform or make attempt to contact the arresting officer. (See *Covert v. State;* 196 Ga. App. 679 request made to jailer within hour of breath test resulted in suppression of test result.)

256 Ga. App. 726: Ladow V. State

The court reversed the trial court's admission of the state administered blood test in Ladow's DUI case, holding that her request "I want a blood test." was for an additional, independent blood test and the state's failure to accommodate it foreclosed introduction of the state administered test.

256 Ga. App. 749: State v. Schmidt

When Schmidt was pulled over for erratic driving he refused to submit to a breath test and requested an independent blood test. Once he was at the jail, he consented to the breath test, after having been read his implied consent rights again, but refused to provide a second breath sample. He did not repeat his request for a blood test. Affirming the trial court's suppression of the breath test results, the court held that Schmidt's refusal to provide a second breath sample does not preclude him from his right to an independent test.

263 Ga. App.222; Cole v. State

Cole was arrested for DUI on Memorial Day and requested an independent blood test. The arresting officer took him to the Houston Medical Center emergency room where blood was drawn but the lab was closed for the holiday. The officer testified that he was unaware of any place that would be open to test the blood given the holiday and the time. The officer stated that he did not attempt to contact either of the other two possible

facilities he knew of in the area, apparently based on his assumption that they would also be closed. . And the record shows that the officer did not suggest any other testing alternatives, such as calling Cole's personal physician or his lawyer, or submitting the sample to the State's crime lab. Reversing denial of Cole's motion to suppress, the court held that an arresting officer has a duty to make **reasonable efforts** to accommodate a request for an independent blood test and failed to make such efforts here; and did not explore any alternative testing measure after discovering Houston Medical Center was closed. A blood sample is not the same as a legally admissible blood test, regardless of whether the blood sample could conceivably have been later used to obtain an independent test.

221 Ga App 274 Hulsinger v State A96A0631

Once an individual requests an independent test, the officer's concomitant duty to accommodate arises and continues until the accused obtains an admissible test or until it is determined that, despite reasonable efforts, such a test can not be obtained. In Hulsinger v. State, the officer gave Hulsinger a phone and a phone book, and Hulsinger arranged a test at a nearby hospital. After the nurse drew his blood, she told Hulsinger that he would have to contact his lawyer about having it tested. The officer suggested that he contact his lawyer or a doctor, and he offered to store the sample for Hulsinger. The court ruled that, there was some evidence, although slight, that the officer had tried to help solve the problem encountered at the hospital. Furthermore, Hulsinger did not produce evidence that a test could be performed anywhere nearby at that hour.

282 Ga App 63 Whittle v State A06A1134

Whittle was arrested for DUI, took the state's test and requested an independent test. The arresting officer testified that Whittle was unfamiliar with the area and asked the officer to recommend a hospital where a blood test could be obtained. He stated that he recommended Emory Adventist and that Whittle agreed. Whittle, on the other hand, testified that he did not want to have the test performed at Emory Adventist Hospital because he was not familiar with that facility. Whittle claimed that he requested and suggested four other hospitals for his independent test. The officer acknowledged that there was some discussion about testing at Kennestone Hospital, but stated that Kennestone was not a viable option and that he had been advised by the hospital staff that Kennestone and the other Wellstar-affiliated hospitals were no longer performing independent tests on persons who were not being admitted to the hospitals for medical reasons. Whittle failed to provide any evidence to refute the officer's testimony, or to otherwise show that his requested hospitals were available for testing at that time. Here, the trial court found that the officer made a reasonable effort to accommodate Whittle's request for an independent blood test.

274 Ga App 248 Koontz v State A05A0284

Koontz took the state's test and requested and independent test. Although Deputy Williams helped Koontz get money and took him to the hospital, he knew that Koontz could not get his blood tested there at that time, and he took no additional steps whatsoever to assist Koontz. He saw the nurse give Koontz his blood sample, but he then took Koontz back to the jail. He did not suggest any alternatives, call other hospitals, or offer any other assistance. Also, there is nothing in the record to show that Koontz did not have enough money for another attempt, that the officer was pressed for time or otherwise prevented from trying again, that another attempt would be too long delayed, or that the other hospitals were too far away or similarly unavailable. In this case, Deputy Williams helped create the problem that he then failed to help solve. Accordingly, he failed to reasonably accommodate Koontz's request for an independent test. If Williams had told Koontz he could store and test his blood sample later, this might alter our conclusion. But it would require some evidence, possibly in the form of expert testimony, about the circumstances under which a blood sample can be stored and tested later.

283 Ga App 284 State v Howard A06A2365

Howard requested an independent test but did not have sufficient cash on hand to pay for the test. Howard then requested that a relative be allowed to go to the facility to pay for the test in advance. The officer denied Howard's request citing safety concerns. The court ruled that Howard was not allowed even to attempt to obtain the needed funds, nor did the officer provide any assistance other than offering to go by an ATM. As the trial court pointed out, where security is of concern, relatives could have been asked to come to a secure lo-

cation, such as the jail, in order to provide Howard with the necessary funds. No evidence indicated that such arrangements would have caused extended delays, nor that the police officer lacked time or resources to make such an accommodation. Vague security concerns, unsupported by any specific evidence, do not provide sufficient grounds to deny an accused's request for an independent test by personnel of his own choosing. "While it is not the officer's duty to insure the performance of an independent test, he cannot prevent a defendant from exercising his right to such a test." The officer rebuffed every suggestion made by Howard and his response was not a "reasonable effort to accommodate" Howard's request for an independent blood test. This had the effect of denying Howard his right to such a test under OCGA 40-6-392.

PROCEDURAL ISSUES

266 Ga App 595 State v. Palmaka

Clarifies the qualifications for an admissible breath test according to GBI rules. Emphasizes that "administrative, procedural, and/or clerical steps performed in conducting a test shall not constitute a part of the approved method of analysis." This removes procedural objections to admissibility of breath tests as any test conducted on an Intox. 5000 that has been inspected periodically and performed by an individual with a valid permit meets the statutory requirement for an approved test. (see State v Padidham A11A0678)

255 Ga. App. 305 Jarriel v. State,

The three hour requirement stated in O.C.G.A. 40-6-391(a)(5) (per se DUI alcohol) may be proved by circumstantial evidence.

281 Ga App 252 Simmons v State A06A1517

This DUI by golf cart defines vehicle in relation to the DUI statute. The court pointed out that 40-6-391 refers to moving vehicles, not motor vehicles," and is not limited to vehicles which are self-propelled. A "vehicle" is defined in OCGA § 40-1-1 (75) to mean "every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, excepting devices used exclusively upon stationary rails or tracks." In addition the court reiterated the DUI statute "draws no distinction between driving on public roads versus private thoroughfares"; further, the fact that the act was committed on private property does not give immunity from prosecution for this crime.

286 Ga App 441 Trull v State A07A1294

Alco-sensor results are not used as evidence of the amount of alcohol or drug in a person's blood. Instead, the alco-sensor is used as an initial screening device to aid the police officer in determining probable cause to arrest a motorist suspected of driving under the influence of alcohol.

2008 Ga App Lexis 1094 Laseter v State A08A1245

We have consistently held...that results of Intoxilyzer breath tests comply with the standard for admissibility as scientifically reliable evidence. And as the Supreme Court observed in Lattarulo, "no procedure is infallible. An accused may always introduce the evidence of the possibility of error or circumstances that might have caused the machine to malfunction. Such evidence would relate to the weight rather than the admissibility of breathalyzer results."

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DRY GAS ETHANOL STANDARD FAQS

Evidential breath tests performed on an Intoxilyzer 9000 utilize a dry gas ethanol standard that is analyzed after the first subject sample to ensure that the instrument is in proper operation. To ensure proper adherence to quality control practices, GBI-DOFS asks that only dry gas standards approved by GBI-DOFS be utilized for evidential breath testing. Failure to utilize the dry gas ethanol standards recommended by GBI-DOFS may result in a failure of the quarterly inspection performed in accordance with O.C.G.A.40-6-392 and GBI Rule 92-3. Vendors currently approved for supplying dry gas ethanol standards as described above are:

CMI Inc. – 67L tanks with certified target values of 0.080 g/210L (+/-0.002) or better.

ILMO Specialty Gases. – 67L tanks with certified target values of 0.080 g/210L (+/- 0.002) or better.

Other vendors may be approved as suppliers of dry gas standards if they meet the quality control criteria of GBI-DOFS. An official list of approved dry gas ethanol standard vendors can be found in GBI-DOFS procedure OP-SIC 05.

Answers to other frequently asked questions regarding dry gas ethanol standards is as follows:

- 67L dry gas tanks should last for approximately 100 tests.
- Price per cylinder is available from the manufacturer
- Shelf storage life is approximately 2-years
- The actual target value of the tank varies very slightly with atmospheric pressure, but the instrument corrects/ compensates the reading for changes in pressure at the testing site. Thus the corrected target value will always be 0.080.
- It is not recommended that dry gas standard tanks be stored at extremely low temperatures. In an abundance of caution it is advisable to ensure that gas standards are not used or stored for prolonged periods of time below 50 degrees F.
- The dry gas tanks you purchase are considered hazardous materials for shipping purposes because the contents of the cylinders are pressurized. Each state has its own regulations about the disposal of these aluminum cylinders. In all cases, the tanks must be empty prior to disposal.
- For contacts and other tank disposal information about various state offices, refer to the following web link:

  http://www.epa.gov/epawaste/wyl/stateprograms.htm

- When working with any chemical there are inherent health and safety risks involved. All individuals working with dry gas ethanol standards should familiarize themselves with the Material Safety Data Sheets (MSDS) supplied by the vendor prior to handling or utilizing tanks.
- Information for ILMO products can be found at the site below by clicking on the MSDS Online link.

  http://www.ilmoproducts.com/resources/

- Tank changes can be performed by area supervisors or specially trained operators known as agency contacts. Areas Supervisors will be responsible for training agency contacts in the proper procedures to replace dry gas tanks and will maintain a list of trained agency contacts at each agency.