



ARKANSAS DEPARTMENT OF HEALTH

**INTOXIMETER EC/IR II
Senior Operator
Training Manual**

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ARKANSAS BREATH TESTING

INTOXIMETER EC/IR II SENIOR OPERATOR TRAINING MANUAL

This manual is provided for information purposes. Memorization is not required for certification. It is revised as necessary.

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RESPONSIBILITIES OF INTOXIMETER EC/IR II SENIOR OPERATOR

1. Insure that the installation, instrument(s), and operators are currently certified.
2. Insure that the instrument is working properly.
3. Insure that the subject has been advised of implied consent rights and that the 20-minute observation period has been adhered to.
4. Operate the breath-testing instrument in accordance with the instructions/questions prompted by the instrument. The printed test record will be evidence that the procedure was followed. (Breath results are reported as g/210L of breath.)
5. Inspect the test record to insure that all information was printed properly.
6. Make a logbook entry of the test at the time the test is completed.
7. Be prepared to testify in court about the test procedure.
8. Notify the Office of Alcohol Testing when the pressure of a dry gas standard cylinder is low or expired.
9. Perform a supervisor test and diagnostic check on the instrument monthly not to exceed 31 days.
 - a) Record the supervisor test and diagnostic check in the logbook in red ink.
 - b) Notify the Arkansas Department of Health, Office of Alcohol Testing, of any instrument failure.
 - c) Retain and file a copy of these tickets as produced by the instrument.
10. Analyze proficiency test sample(s) when received and report the results to the Office of Alcohol Testing, by the 15th of the month to maintain certification.
11. Keep appropriate records as required by the Office of Alcohol Testing.
12. Keep adequate inventory of all supplies.
13. A Senior Operator is to be present for inspections by the Office of Alcohol Testing.

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ARKANSAS CODE, CHAPTER 65 (Excerpts), (UPDATED MAY, 2009)

The word "Omitted" indicates that the actual text of the law is not of interest here.

5-65-101. OMNIBUS DWI ACT - APPLICATION.

- (a) This act shall be known as the "Omnibus DWI Act."
- (b) The provisions of this act shall govern the prosecution and administrative proceedings for offenses defined by this act and committed after March 21, 1983.
- (c) Omitted.

5-65-102. DEFINITIONS.

As used in this act, unless the context otherwise requires:

- (1) "Intoxicated" means influenced or affected by the ingestion of alcohol, a controlled substance, any intoxicant, or any combination thereof, to such a degree that the driver's reactions, motor skills, and judgment are substantially altered and the driver, therefore, constitutes a clear and substantial danger of physical injury or death to himself and other motorists or pedestrians;
- (2) "Controlled substance" means a drug, substance, or immediate precursor in Schedules I through VI. The fact that any person charged with a violation of this act is or has been entitled to use that drug or controlled substance under the laws of this state shall not constitute a defense against any charge of violating this act;
- (3) "Victim impact statement" means a voluntary written or oral statement of a victim, or relative of a victim, who has sustained serious injury due to a violation of this act.

5-65-103. UNLAWFUL ACTS.

- (a) It is unlawful and punishable as provided in this act for any person who is intoxicated to operate or be in actual physical control of a motor vehicle.

- (b) It is unlawful and punishable as provided in this act for any person to operate or be in actual physical control of a motor vehicle if at that time the alcohol concentration in the person's breath or blood was eight-hundredths (0.08) or more based upon the definition of breath, blood and urine concentration in § 5-65-204.

5-65-104. SEIZURE, SUSPENSION, AND REVOCATION OF LICENSE – TEMPORARY PERMITS. [Effective July 1, 1996.]

- (a) (1) At the time of arrest for operating or being in actual physical control of a motor vehicle while intoxicated or while there was an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood, § 5-65-103, or refusing to submit to a chemical test of blood, breath, or urine for the purpose of determining the alcohol or controlled substance contents of the person's blood or breath, § 5-65-202, the arrested person shall immediately surrender his license, permit, or other evidence of driving privilege to the arresting law enforcement officer. The officer shall seize the license, permit, or other evidence of driving privilege surrendered by the arrested person or found on the arrested person during a search.
- (2) If the license, permit, or other evidence of driving privilege seized by the officer has not expired and otherwise appears valid to the officer, the officer shall issue to the arrested person a dated receipt for that license, permit, or other evidence of driving privilege on a form prescribed by the Department of Finance and Administration or its designee. This receipt shall be recognized as a license and shall authorize the arrested person to operate a motor vehicle for a period not to exceed thirty (30) days. The receipt form shall contain and shall constitute a notice of suspension or revocation of driving privileges by the Office of Driver Services of the Revenue Division of the Department of Finance and Administration, effective in thirty (30) days, notice of the right to a hearing within twenty (20) days, and as notice that, if a hearing is to be requested, the hearing request is required to be made within seven (7) calendar days of the notice being given. The receipt shall also contain details and phone numbers of the Office of Driver Services telling how to request the hearing. If the Office of Driver Services is unable to conduct a hearing within the twenty-day period, a temporary permit shall be issued and shall be valid until the date of the hearing. The seized license, permit, or other evidence of driving privilege and a copy of the receipt form issued to the arrested person shall be attached to the sworn report of the arresting officer and shall be submitted by mail or in person to the Director of the Department of Finance and Administration or his designated representative within seven (7) days of the issuance of the receipt. The failure of the arresting officer to timely file this report shall not affect the authority of the Office of Driver Services to suspend or revoke the driving privilege of the arrested person.

- (3) Any notices from the Office of Driver Services required under this act which are not personally delivered shall be sent by certified mail and shall be deemed to have been delivered on the date when postmarked and shall be sent to the last known address on file with the Office of Driver Services. Refusal of the addressee to accept delivery or attempted delivery of the notice at the address obtained by the arresting law enforcement officer or on file with the Office of Driver Services shall not constitute nonreceipt of notice. For all notices which are personally delivered, the person shall be asked to sign a receipt acknowledging he received the required notice.
- (4) The Office of Driver Services of the Revenue Division of the Department of Finance and Administration or its designated official shall suspend or revoke the driving privilege of an arrested person or shall suspend any nonresident driving privilege of an arrested person when it receives a sworn report from the law enforcement officer that he had reasonable grounds to believe the arrested person had been operating or was in actual physical control of a motor vehicle while intoxicated or while there was an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood, § 5-65-103, which is accompanied by a written chemical test report reflecting that the arrested person was intoxicated or had an alcohol concentration of eight-hundredths (0.08) or more, in the breath or blood, or is accompanied by a sworn report that the arrested person refused to submit to a chemical test of blood, breath, or urine for the purpose of determining the alcohol or controlled substance contents of the person's blood or breath, as provided in § 5-65-202. The suspension or revocation shall be based on the number of previous offenses as follows:
 - (A) Penalties omitted.
 - (B) Omitted.
 - (C) Omitted.
 - (D) Omitted.
- (5) Omitted.
- (6) Omitted.
- (7) Upon the written request of a person whose privilege to drive has been revoked, denied, or suspended, or who has received a notice of revocation, suspension, or denial by the arresting officer, the Office of Driver Services shall grant the person an opportunity to be heard provided the request is received by the Office of Driver Services within seven (7) calendar days after the notice of revocation, suspension, or denial is given in

accordance with this section or as otherwise provided in this act. Such a request shall not operate to stay the revocation, suspension, or denial by the Office of Driver Services until the disposition of said hearing.

- (8) (A) The hearing shall be before the Office of Driver Services or its authorized agent, in the office of the Revenue Division of the Department of Finance and Administration nearest the county wherein the alleged events occurred for which the person was arrested, unless the Office of Driver Services or its authorized agent may schedule the hearing or any part thereof by telephone and conduct the hearing by telephone conference call. The hearing shall not be recorded. The scope of the hearing shall cover the issues of whether the officer had reasonable grounds to believe the person had been operating or was in actual physical control of a vehicle while intoxicated or while there was an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood or refused to submit to a chemical test of the blood, breath, or urine for the purpose of determining the alcohol or controlled substance contents of the person's breath or blood and whether the person was placed under arrest. At the hearing, the burden of proof shall be on the state, and the decision shall be based on a preponderance of the evidence.
- (B) If the revocation, suspension, or denial is based upon a chemical test result indicating that the person was intoxicated or there was an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood, as provided in § 5-65-103, and a sworn report from a law enforcement officer, the scope of the hearing shall also cover the issues as to whether:
- (i) The person was advised that his privilege to drive would be revoked, suspended, or denied if the test result reflected an alcohol concentration of eight-hundredths (0.08) or more or the presence of other intoxicating substances or combination of intoxicating substances;
 - (ii) The breath, blood, or urine specimen was obtained from the person within the established and certified criteria of the Department of Health;
 - (iii) The testing procedures used were in accordance with existing rules; and
 - (iv) The test result in fact reflects an alcohol concentration, presence of other intoxicating substances, or a combination thereof.

- (C) If the revocation, suspension, or denial is based upon the refusal of the person to submit to a chemical test as provided in § 5-65-202, reflected in a sworn report by a law enforcement officer, the scope of the hearing shall also include whether:
- (i) The person refused to submit to the test or tests; and
 - (ii) The person was informed that his privilege to drive would be revoked, suspended, or denied if the person refused to submit to the test or tests.
- (9) Omitted.
- (b) Omitted.
- (c) A person adversely affected by the hearing disposition order of the Office of Driver Services of the Revenue Division of the Department of Finance And Administration or its authorized agent may file a de novo petition for review within thirty (30) days in the circuit court in the county in which the offense took place. The filing of a petition for review will not stay or place in abeyance the decision of the Office of Driver Services or its agent. The administrative hearings held pursuant to this section shall be exempt from the Arkansas Administrative Procedure Act § 25-15-201 et seq. On review, the circuit court shall hear the case de novo in order to determine whether, based on a preponderance of the evidence, grounds exist for revocation, suspension, or denial of the person's privilege to drive.
- (d) (1) Any decision rendered at an administrative hearing held under this section shall have no effect on any criminal case arising from any violation of § 5-65-103 or § 5-65-202.
- (2) Any decision rendered by a court of law for a criminal case arising from any violation of § 5-65-103 or § 5-65-202 shall affect the administrative suspensions or revocation of the driver's license as follows:
- (A) A plea of guilty or nolo contendere or a finding of guilt by the court will have no effect of any administrative hearing held under this section.
 - (B) An acquittal on the charges or a dismissal of charges will serve to reverse the suspension or revocation of the driver's license suspended or revoked under this section.
- (3) If a person is acquitted of the charges of violating § 5-65-103 or § 5-65-202, or if the charges are dismissed, the Office of Driver Services shall reinstate the person's driver license at no cost to the person, and the charges shall

not be used to determine the number of previous offenses when administratively suspending or revoking the driver privilege of any arrested person in the future.

- (e) Any person whose privilege to drive has been denied, suspended, or revoked shall remain under such denial, suspension or revocation, until such time that person applies to and is granted by the Office of Driver Services for reinstatement of such privilege to drive, and remains subject to penalties as provided in § 5-65-105 or until he is acquitted of violating § 5-65-103.
- (f) The administrative suspension or revocation of a driver's license as provided for by this section shall be supplementary to and in addition to the suspensions or revocations of driver licenses which are ordered by a court of competent jurisdiction for offenses under §§ 5-64-710, 5-65-116, and 27-16-914, or any other traffic or criminal offense wherein a suspension or revocation of the driver's license is a penalty for the violation.
- (g) For all arrests or offenses occurring before July 1, 1996, but which have not reached a final disposition as to judgment in court, the offenses shall be decided under the law in affect at the time the offense occurred, and any defendant shall be subject to the penalty provisions in effect at that time and not under the provisions of this section.

5-65-105. OPERATION OF MOTOR VEHICLE DURING PERIOD OF LICENSE SUSPENSION OR REVOCATION.

Any person whose privilege to operate a motor vehicle has been suspended or revoked under the provisions of this act, who shall, during the period of such suspension or revocation, operate a motor vehicle in this state, shall be imprisoned for ten (10) days.

5-65-106. IMPOUNDMENT OF LICENSE PLATE.

- (a) When any law enforcement officer arrests a person for operating a motor vehicle while that person's operator's license or permit has been suspended or revoked under the laws of any state due to such person having previously been found guilty or having pleaded guilty or nolo contendere to violating § 5-65-103, and if the motor vehicle operated by the person is owned in whole or part by the person, the motor vehicle license plate shall be impounded by the law enforcement officer for no less than ninety (90) days.

- (b) If the court determines it is in the best interest of dependents of the offender, the court shall instruct the Director of the Department of Finance and Administration to issue a temporary substitute license plate to that vehicle, and the license plate shall indicate that the original plate has been impounded.

5-65-107. PERSONS ARRESTED TO BE TRIED ON CHARGES - NO CHARGES REDUCED - FILING CITATIONS.

- (a) Persons arrested violating § 5-65-103 shall be tried on those charges or plead to such charges, and no such charges shall be reduced.
- (b) Furthermore, when a law enforcement officer issues a citation for violating § 5-65-103, the citation shall be filed with the court as soon as possible.

5-65-108. NO PROBATION PRIOR TO ADJUDICATION OF GUILT.

- (a) Section 16-93-301 et seq. allows judges of circuit and municipal courts to place on probation first offenders who plead guilty or nolo contendere prior to an adjudication of guilt.
- (b) Upon successful completion of the probation terms, the judge is allowed to discharge the accused without a court adjudication of guilt and expunge the record.
- (c) Hereafter, neither circuit judge nor municipal judge may utilize the provisions of § 16-93-301 et seq. in instances where the defendant is charged with violating § 5-65-103.

5-65-109. PRESENTENCING REPORT.

- (a) Upon finding of guilt or a plea of guilty or nolo contendere for violating § 5-65-103, the court shall immediately request and the Arkansas Highway Safety Program or its designee shall provide a presentence screening and assessment report of the defendant. However, in cases where the jury fixes and agrees on punishment pursuant to § 5-65-103(a), the decision whether to request a presentence screening and assessment report is discretionary with the court.
- (b) The presentence report shall be provided within thirty (30) days of the request, and the court shall not pronounce sentence until receipt of the presentence report.

- (c) The report shall include, but not be limited to, the offender's driving record, an alcohol problem assessment, and a victim impact statement where applicable.

5-65-110. RECORD OF VIOLATIONS AND COURT ACTIONS - ABSTRACT.

- (a) Every magistrate or judge of a court shall keep or cause to be kept a record of every violation of this act presented to that court and shall keep a record of every official action by that court in reference thereto including, but not limited to, a record of every finding of guilt, plea of guilty or nolo contendere, judgment or acquittal, and the amount of fine and jail sentence.
- (b) Within thirty (30) days after sentencing a person who has been found guilty, or pleaded guilty or nolo contendere on a charge of violating any provision of this act, every magistrate of the court or clerk of the court shall prepare and immediately forward to the Office of Driver Services an abstract of the record of the court covering the case in which the person was found guilty, or pleaded guilty or nolo contendere, which abstract shall be certified by the person so required to prepare it to be true and correct.
- (c) The abstract shall be made upon a form furnished by the Office of Driver Services and shall include:
 - (1) The name and address of the party charged;
 - (2) The number, if any, of the operator's or chauffeur's license of the party charged;
 - (3) The registration number of the vehicle involved;
 - (4) The date of hearing;
 - (5) The plea;
 - (6) The judgment; and
 - (7) The amount of the fine and jail sentence, as the case may be.

5-65-111. PRISON TERMS - EXCEPTION.

Omitted.

5-65-112. FINES.

Omitted.

5-65-113. ADDITIONAL COURT COSTS. (Repealed 1995)

Omitted.

5-65-114. INABILITY TO PAY - ALTERNATIVE PUBLIC SERVICE WORK.

Omitted.

5-65-115. ALCOHOL TREATMENT OR EDUCATION PROGRAM - FEE.

Omitted.

5-65-116. DENIAL OF DRIVING PRIVILEGES FOR MINOR - RESTRICTED PERMIT.

Omitted.

5-65-117. SEIZURE AND SALE OF MOTOR VEHICLES.

Omitted.

5-65-118. ADDITIONAL PENALTIES - IGNITION INTERLOCK DEVICES.

Omitted.

5-65-119. DISTRIBUTION OF FEE.

Omitted.

5-65-120. RESTRICTED DRIVING PERMIT. [Effective July 1, 1996.]

- (a) On July 1, 1996, and thereafter, the Office of Driver Services or its designated agent, following the administrative hearing for suspension or revocation of a driver's license as provided for in § 5-65-104, or upon the request of the person whose privilege to drive had been denied or suspended, may modify the denial or suspension in cases of extreme and unusual hardship by the issuance of a restricted driving permit when it is determined by the Office of Driver Services or its agent that no other adequate means of transportation exists for that person to allow driving in any or all of the following situations:
- (1) To and from his or her place of employment; or
 - (2) In the course of his or her employment; or
 - (3) To and from an educational institution for the purpose of attending classes if the person is enrolled and regularly attending classes at the institution; or
 - (4) To and from the alcohol safety education and treatment course for drunk drivers.
- (b) The restricted driving permit shall state the specific times and circumstances under which driving is permitted, but shall not be granted where prohibited under § 5-65-104.
- (c) For all arrests or offenses occurring before July 1, 1996, but which have not reached a final disposition as to judgment in court, the offenses shall be decided under the law in effect at the time the offense occurred, and any defendant shall be subject to the penalty provisions in effect at that time and not under the provisions of this section.

5-65-201. RULES AND REGULATIONS.

The State Department of Health is authorized to promulgate rules and regulations reasonably necessary to carry out the purposes of this act.

5-65-202. IMPLIED CONSENT.

- (a) Any person who operates a motor vehicle or is in actual physical control of a motor vehicle in this state shall be deemed to have given consent, subject to the provisions of § 5-65-203, to one (1) or more chemical tests of his or her blood, breath, or urine for the purpose of determining the alcohol or controlled substance content of his or her breath or blood if:

- (1) The person is arrested for any offense arising out of an act alleged to have been committed while the person was driving while intoxicated or driving while there was an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood; or
 - (2) The person is involved in an accident while operating or in actual physical control of a motor vehicle; or
 - (3) At the time the person is arrested for driving while intoxicated, the law enforcement officer has reasonable cause to believe that the person, while operating or in actual physical control of a motor vehicle, is intoxicated or has an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood.
- (b) Any person who is dead, unconscious, or otherwise in a condition rendering him or her incapable of refusal shall be deemed not to have withdrawn the consent provided by subsection (a) of this section, and one (1) or more chemical tests may be administered subject to the provisions of § 5-65-203.

5-65-203. ADMINISTRATION.

- (a) One (1) or more chemical tests authorized in § 5-65-202 shall be administered at the direction of a law enforcement officer having reasonable cause to believe the person to have been operating or in actual physical control of a motor vehicle while intoxicated or while there was an alcohol concentration of eight-hundredths (0.08) or more in the person's breath or blood.
- (b)
 - (1) The law enforcement agency by which the law enforcement officer is employed shall designate which chemical test or chemical tests shall be administered, and the law enforcement agency is responsible for paying any expense incurred in conducting the chemical test or chemical tests.
 - (2) If the person tested requests that additional chemical test or chemical tests be made, as authorized in § 5-65-204(e), the cost of the additional chemical test or chemical tests shall be borne by the person tested, unless the person is found not guilty, in which case the arresting law enforcement agency shall reimburse the person for the cost of the additional chemical test or chemical tests.
 - (3) If any person shall object to the taking of his or her blood for a chemical test, as authorized in this chapter, the breath or urine of the person may be used to make the chemical analysis.

5-65-204. VALIDITY - APPROVED METHODS.

- (a) (1) Alcohol concentration shall mean either:
- (A) Grams of alcohol per one hundred (100) milliliters, or cubic centimeters, of blood; or
 - (B) Grams of alcohol per two hundred ten (210) liters of breath.
- (2) The alcohol concentration of other bodily substances shall be based upon grams of alcohol per one hundred (100) milliliters, or cubic centimeters, of blood, the same being percent weight per volume or percent alcohol concentration.
- (b) Chemical analyses of the person's blood, urine, or breath to be considered valid under the provisions of this act shall have been performed according to methods approved by the Arkansas State Department of Health or by an individual possessing a valid permit issued by the State Department of Health for this purpose. The State Department of Health is authorized to approve satisfactory techniques or methods, to ascertain the qualifications and competence of individuals to conduct such analyses, and to issue permits which shall be subject to termination or revocation at the discretion of the State Department of Health.
- (c) Chemical analyses of the person's blood, urine, breath, or other bodily substance for determining the alcohol content of the blood or breath, to be considered valid under the provisions of this section, shall have been performed according to methods approved by the Arkansas State Board of Health.
- (d) When a person shall submit to a blood test at the request of a law enforcement officer under the provisions of this section, blood may be drawn by a physician or a person acting under the direction and supervision of a physician.
- (1) This limitation shall not apply to the taking of breath or urine specimens.
 - (3) No person, institution, or office in this state who withdraws blood for the purpose of determining alcohol or controlled substance content thereof at the request of a law enforcement officer under the provisions of this subchapter shall be held liable for violating any of the criminal laws of this state in connection therewith, nor shall any physician, institution, or person acting under the direction of supervision of a physician be held liable in tort for the withdrawal of such blood unless such persons are negligent in connection therewith, or the blood is taken over the objections of the subject.

- (e) The person tested may have a physician or a qualified technician, registered nurse, or other qualified person of his own choice administer a complete chemical test in addition to any test administered at the direction of a law enforcement officer.
 - (1) The law enforcement officer shall advise the person, in writing, of this right and that if the person chooses to have an additional test and the person is found not guilty, the arresting law enforcement agency will reimburse the person for the cost of the additional test.
 - (2) The refusal or failure of a law enforcement officer to advise such person of this right and to permit and assist the person to obtain such test shall preclude the admission of evidence relating to the test taken at the direction of a law enforcement officer.
- (f) Upon the request of the person who shall submit to a chemical test or tests at the request of a law enforcement officer, full information concerning the test shall be made available to him or his attorney.

5-65-205. REFUSAL TO SUBMIT. [Effective July 1, 1996.]

- (a) If a person under arrest refuses upon the request of a law enforcement officer to submit to a chemical test designated by the law enforcement agency, as provided in § 5-65-202, none shall be given, and the person's motor vehicle operator's license shall be seized by the law enforcement officer, and the officer shall immediately deliver to the person from whom the license was seized a temporary driving permit.
- (b) The Office of Driver Services shall then proceed to suspend or revoke the driving privilege of the arrested person, or any nonresident's driving privilege, on the basis of the number of previous offenses in accordance with the provisions of § 5-65-104.
- (c) For all arrests or offenses occurring before July 1, 1996, but which have not reached a final disposition as to judgment in court, the offenses shall be decided under the law in effect at the time the offense occurred, and any defendant shall be subject to the penalty provisions in effect at that time and not under the provisions of this section.

5-65-206. EVIDENCE IN PROSECUTION.

- (a) In any criminal prosecution of a person charged with the offense of driving while intoxicated, the amount of alcohol in the defendant's breath or blood at the time or within four (4) hours of the alleged offense, as shown by chemical analysis of the defendant's blood, urine, breath, or other bodily substance shall give rise to the following:
- (1) If there was at that time an alcohol concentration of four-hundredths (0.04) or less in the defendant's blood, urine, breath, or other bodily substance, it shall be presumed that the defendant was not under the influence of intoxicating liquor;
 - (2) If there was at the time an alcohol concentration in excess of four-hundredths (0.04) but less than eight-hundredths (0.08) by weight of alcohol in the defendant's blood, urine, breath, or other bodily substance, such fact shall not give rise to any presumption that the defendant was or was not under the influence of intoxicating liquor, but this fact may be considered with other competent evidence in determining the guilt or innocence of the defendant.
- (b) The foregoing provisions shall not be construed as limiting the introduction of any other relevant evidence bearing upon the question whether or not the defendant was intoxicated.
- (c) The chemical analysis referred to in this section shall be made by a method approved by the State Board of Health.
- (d) (1) (A) The records and reports of certifications, rules, evidence analysis, or other documents pertaining to work performed by the Office of Alcohol Testing of the Department of Health under the authority of this chapter shall be received as competent evidence as to the matters contained therein in the courts of this state subject to the applicable rules of criminal procedure when duly attested to by the program director or his assistant, in the form of an original signature or by certification of a copy.
- (B) These documents shall be self-authenticating.
- (2) However, the instrument performing the chemical analysis shall have been duly certified at least once in the last three (3) months preceding arrest and the operator thereof shall have been properly trained and certified.

- (2) Nothing in this section shall be deemed to abrogate a defendant's right of cross-examination of the person who performs the calibration test or check on the instrument, the operator of the instrument, or a representative of the Office of Alcohol Testing of the Department of Health.

- (4) The testimony of the appropriate analyst or official may be compelled by the issuance of a proper subpoena given ten (10) days prior to the date of hearing or trial, in which case the records and reports shall be admissible through the analyst or official, who shall be subject to cross-examination by the defendant or his counsel.

5-65-207. ALCOHOL TESTING DEVICES.

- (a) Every instrument used to determine the alcohol content of the breath for the purpose of determining if the person was operating a motor vehicle while intoxicated or with an alcohol concentration of eight-hundredths (0.08) or more shall be so constructed that the analysis is made automatically when a sample of the person's breath is placed in the instrument, and without any adjustment or other action of the person administering the analysis, and the instrument shall be so constructed that the alcohol content is shown by visible digital display on the instrument and on an automatic readout.

- (b) Any such breath analysis made by or through the use of an instrument that does not conform to the requirements prescribed herein shall be inadmissible in any criminal or civil proceeding.

- (c) The State Board of Health is authorized to adopt appropriate rules and regulations to carry out the intent and purposes of this section, and only instruments approved by the board as meeting the requirements of this section and regulations of the board shall be used for making the breath analysis for determining alcohol concentration. The Department of Health is specifically authorized to limit by its rules the types or models of testing devices which may be approved for use in Arkansas for the purposes set forth in this section. The approved types or models will be specified by manufacturer's name and model.

- (d) All law enforcement agencies which conduct alcohol testing shall be in full compliance with the provisions of this section by June 28, 1989.

5-65-208. COLLISIONS--TESTING REQUIRED.

- (a) (1) When the driver of a motor vehicle is involved in an accident resulting in loss of human life or where there is reason to believe death may result, in addition to a penalty established elsewhere under state law, a chemical test of the driver's blood, breath, or urine shall be administered to the driver, even if fatally injured, to determine the presence of and percentage of concentration of alcohol or the presence of drugs, or both, in the driver's body.
- (b) (1) The law enforcement agency that investigates the collision, the physician in attendance, or any other person designated by state law shall order the test as soon as practicable.
- (2) (A) The medical personnel who conducted the chemical test under subsection (a) of this section of the driver's blood, breath, or urine shall forward the results of the chemical test to the Department of Arkansas State Police, and the department shall establish and maintain the results of the analyses required by subsection (a) of this section in a database.
- (B) The information in the database shall reflect the number of fatal motor vehicle accidents in which:
- (i) Alcohol was found to be a factor, with the percentage of alcohol concentration involved;
 - (ii) Drugs were found to be a factor, listing the class of drugs so found and their amounts; and
 - (iii) Both alcohol and drugs were found to be factors, with the percentage of alcohol concentration involved, and listing the class of drugs so found and their amounts.
- (c) The results of the analyses required by this section shall be reported to the Department of Arkansas State Police and may be used by state and local officials for statistical purposes that do not reveal the identify of the deceased person or for any law enforcement purpose, including prosecution for the violation of any law.

5-65-301. TITLE.

This subchapter may be known and cited as the "Underage Driving Under the Influence Law" or the "Underage DUI Law".

5-65-302. DEFINITIONS.

As used in this subchapter, unless the context otherwise requires:

- (1) "Influence" means being controlled or affected by the ingestion of an alcoholic beverage or similar intoxicant, or any combination thereof, to such a degree that the driver's reactions, motor skills, and judgment are altered or diminished, even to the slightest scale, and the underage driver therefore, due to inexperience and lack of skill, constitutes a danger of physical injury or death to himself and other motorists or pedestrians;
- (2) "Underage" means any person who is under the age of twenty-one (21) years old and therefore may not legally consume alcoholic beverages in Arkansas.

5-65-303. CONDUCT PROSCRIBED.

- (a) It is unlawful and punishable as provided in this subchapter for any underage person to operate or be in actual physical control of a motor vehicle while under the influence of an alcoholic beverage or similar intoxicant.
- (b) It is unlawful and punishable as provided in this subchapter for any underage person to operate or be in actual physical control of a motor vehicle if at that time there was an alcohol concentration of two-hundredths (0.02) but less than eight-hundredths (0.08) in the person's breath or blood as determined by a chemical test of the person's blood or breath or other bodily substance.

5-65-304. SEIZURE, SUSPENSION, AND REVOCATION OF LICENSE - TEMPORARY PERMITS.

- (a)
 - (1) At the time of arrest for violating § 5-65-303, the arresting officer shall seize the motor vehicle operator's license of the underage person arrested and issue to such person a temporary driving permit to expire on the date of arraignment.
 - (2) The arresting office shall remit the seized driver's license to the court.
 - (3) Upon arraignment, the judge shall issue such person a temporary permit to expire on the date of the trial.
 - (4) If the person is convicted of violating § 5-65-303, the court shall transmit the driver's license to the Office of Driver Services and shall instruct the Office of Driver Services to suspend or revoke the person's driver's license as follows:

- (A) Suspension for not less than ninety (90) days nor more than one hundred twenty (120) days for the first offense;
 - (B) Suspension for not less than one (1) year nor more than eighteen (18) months for a second offense while underage;
 - (C) Revocation for the third or subsequent offense occurring while the person is underage. Revocation shall be until the underage person reaches the age of twenty-one (21) or for a period of three (3) years, whichever is longer.
- (5) For suspension or revocation purposes under this subchapter, an underage person who has one (1) or more previous convictions for a violation of the Omnibus DWI Act, § 5-65-101 et seq., shall be deemed to have a conviction for a violation of this subchapter for each conviction for driving while intoxicated.
- (b) Omitted.
- (c) (1) The Office of Driver Services shall charge a fee of twenty-five dollars (\$25.00) for reinstating a driver's license suspended because of a conviction for a violation of § 5-65-303.
- (2) Forty percent (40%) of the revenues derived from this fee shall be deposited in the State Treasury as special revenues and credited to the Public Health Fund to be used exclusively for the Department of Health's Blood Alcohol Program.

5-65-305. FINES.

- (a) Any person who pleads guilty, nolo contendere, or is found guilty of violating § 5-65-303 shall be fined:
- (1) No less than one hundred dollars (\$100) nor more than five hundred dollars (\$500) for the first offense;
 - (2) No less than two hundred dollars (\$200) nor more than one thousand dollars (\$1,000) for the second offense occurring underage;
 - (3) No less than five hundred dollars (\$500) nor more than two thousand dollars (\$2,000) for the third or subsequent offense occurring underage.

- (b) For the purpose of determining an underage person's fines under this subchapter, an underage person who has one (1) or more previous convictions for a violation of the Omnibus DWI Act, § 5-65-101 et seq., shall be deemed to have a conviction for a violation of this subchapter for each conviction for driving while intoxicated.

5-65-306. PUBLIC SERVICE WORK.

Any underage person who pleads guilty or nolo contendere, or is found guilty of violating § 5-65-303 shall be ordered by the court to perform public service work of the type and for the duration as deemed appropriate by the court.

5-65-307. ALCOHOL AND DRIVING EDUCATION PROGRAM.

- (a) (1) Any underage person who pleads guilty or nolo contendere or is found guilty of violating § 5-65-303, shall, in addition to other penalties provided herein, be required to complete an alcohol and driving education program for underage drivers as prescribed and approved by the Arkansas Highway Safety Program.
- (2) The Arkansas Highway Safety Program shall approve only those programs in alcohol and driving education which are targeted at the underage driving group and are intended to intervene and prevent repeat occurrences of driving under the influence or driving while intoxicated.
- (3) The alcohol and driving education program may collect a program fee of up to fifty dollars (\$50.00) per enrollee to offset program costs.
- (4) A person ordered to complete an alcohol and driving education program under this section may be required to pay, in addition to the costs collected for the program, a fee of up to twenty-five dollars (\$25.00) to offset the additional costs associated with reporting requirements under this subchapter.
- (5) An approved alcohol and driving education program shall report semiannually to the Arkansas Highway Safety Program all revenue derived from these fees.
- (b) Prior to reinstatement of a driver's license suspended or revoked under this subchapter, the driver shall furnish proof of attendance at and completion of the alcohol and driving education program.

(c) Repealed.

(d) Omitted.

5-65-308. NO PROBATION PRIOR TO ADJUDICATION OF GUILT.

Omitted.

5-65-309. IMPLIED CONSENT.

- (a) Any underage person who operates a motor vehicle or is in actual physical control of a motor vehicle in this state shall be deemed to have given consent, subject to the provisions of § 5-65-203, to a chemical test of his or her blood, breath, or urine for the purpose of determining the alcohol or controlled substance content of his or her breath or blood if:
- (1) The driver is arrested for any offense arising out of acts alleged to have been committed while the underage person was driving while under the influence or driving while there was an alcohol concentration of two-hundredths (0.02) but less than eight-hundredths (0.08) in his or her breath or blood; or
 - (2) The underage person is involved in an accident while operating or in actual physical control of a motor vehicle; or
 - (3) The underage person is stopped by a law enforcement officer who has reasonable cause to believe that the person, while operating or in actual physical control of a motor vehicle, is under the influence or has an alcohol concentration of two-hundredths (0.02) but less than eight-hundredths (0.08) in his or her breath or blood.
- (b) Any underage person who is dead, unconscious, or otherwise in a condition rendering him incapable of refusal shall be deemed not to have withdrawn the consent provided by subsection (a) of this section, and the tests may be administered subject to the provisions of § 5-65-203.

5-65-310. REFUSAL TO SUBMIT.

- (a) If an underage person under arrest refuses upon the request of a law enforcement officer to submit to a chemical test designated by the law enforcement agency, as provided in § 5-65-309, none shall be given, and the person's driver's license shall be seized by the law enforcement officer, and the officer shall immediately deliver to the person from whom the license was seized a temporary driving permit which shall expire on the date of arraignment.
- (b) The arresting officer shall remit the seized driver's license to the court, and, upon an arraignment, the judge shall issue that person a temporary permit to expire on the date of trial.
- (c) If the judge determines that the law enforcement officer had reasonable cause to believe the arrested underage person had been driving under the influence or while there was an alcohol concentration of two-hundredths (0.02) but less than eight-hundredths (0.08) in his or her breath or blood; and the underage person refused to submit to the test upon the request of the law enforcement officer, the judge shall order the Office of Driver Services to suspend the person's driver's license as follows:
 - (1) Suspension for not less than ninety (90) days nor more than one hundred eighty (180) days if the underage person had not previously refused the test while underage and if the underage person had not been convicted of driving while under the influence or driving while there was an alcohol concentration of two-hundredths (0.02) but less than eight-hundredths (0.08) in his or her breath or blood while underage;
 - (2) Suspension for not less than one (1) year nor more than eighteen (18) months if the underage person had previously refused the test while underage or if the underage person had been convicted of driving while under the influence or driving while there was an alcohol concentration of two-hundredths (0.02) but less than eight-hundredths (0.08) in his or her breath or blood while underage.
- (d) If the underage person is a resident without a license or permit to operate a motor vehicle in this state, the Office of Driver Services shall deny to the person the issuance of a license or permit for a period of two (2) years after the date of the arrest.
- (e) (1) If the person is a nonresident, that person's privilege of operating a motor vehicle in Arkansas shall be suspended for not less than six (6) months.

- (2) When a nonresident's privilege to operate a motor vehicle in this state has been suspended, the Office of Driver Services shall notify the office of issuance of that person's nonresident motor vehicle license of action taken by the Office of Driver Services.

5-65-311. RELATIONSHIP TO OTHER LAWS.

- (a) Penalties prescribed in this subchapter for underage driving under the influence shall be in addition to all other penalties prescribed by law for the offenses under other laws of the State of Arkansas.
- (b) For the purposes of this subchapter, there is no presumption, as there is found in § 5-65-206, that a person is not under the influence of an intoxicating substance, such as alcohol or a similar intoxicant, if the person's alcohol concentration is four hundredths (0.04) of one percent or less.
- (c) The administration of the chemical tests for breath or blood alcohol, the instruments used to administer those tests, the procedures used to calibrate and maintain those instruments, and the use of the test results as evidence shall be the same as for those tests and instruments used for testing breath or blood alcohol concentrations under the Omnibus DWI Act, § 5-65-101 et seq.
- (d) If there is evidence of an alcohol concentration of more than four-hundredths (0.04) but less than eight-hundredths (0.08) in a person's blood, breath, or other bodily substances, this fact shall not preclude a person under twenty-one (21) years of age from being prosecuted for driving while intoxicated under § 5-65-101 et seq.

5-75-101 - 107. OPERATION OF AIRCRAFT WHILE INTOXICATED.

Omitted.

27-23-101 - 124 & 27-16-801. ARKANSAS UNIFORM COMMERCIAL DRIVER LICENSE ACT.

Omitted.

ARKANSAS COURT DECISIONS

The following are court decisions relating to chemical tests for alcoholic influence in Arkansas.

Stacy v State, 228 Ark. 260, 306 S.W. 2d 852 (1957).

Result of chemical test of specimen (breath) by means of drunkometer submitted to by defendant, charged with motor vehicle homicide, three hours after collision was admissible upon proof that accused had not consumed any more intoxicants during that interval.

Jones v Forrest City, Ark., 388 S.W. 2d 386 (1965).

Result of chemical test of specimen (urine) taken with consent of defendant charged with driving while under influence of intoxicants was not admissible because identity of specimen not properly shown, and approval of analysis method by state agencies as required by statute not shown.

Smith v State, 243 Ark. 12, 418 S.W. 2d 627 (1967).

Result of chemical test of specimen (breath) by means of Breathalyzer, taken from defendant charged with motor vehicle homicide, was admissible solely upon testimony of police operator of device, despite fact he did not know scientific principles of its operation.

Walker v State, 244 Ark. 1150, 429 S.W. 2d 121 (1968).

Result of chemical test of specimen (blood) taken from defendant without his permission by laboratory technician in hospital where he was being treated for injuries received in traffic collision was admissible in subsequent trial for motor vehicle homicide. Evidence showed technician did not act at request or direction of police by prearrangement with them. Search and seizure provisions of constitution are restraints upon the government and its agencies, not upon private individuals.

Ragsdale v State, 245 Ark. 299, 432 S.W. 2d 11 (1968).

Result of chemical test of specimen (blood) taken from defendant under treatment in hospital for injuries sustained in traffic collision was not admissible in subsequent prosecution for motor vehicle homicide because specimen was taken by his doctor for purposes of treatment and therefore evidence thereof came within scope of doctor-patient privilege.

Johnson v State, Ark., 473 S.W. 2d 155 (1971).

Result of test of specimen (breath) taken from defendant in burglary case by means of electronic intoximeter was admissible on question of his mental capability to form intent.

Small v City of Little Rock, Ark., 484 S.W. 2d 81 (1972).

Result of chemical test of specimen (breath) by means of breathalyzer, to which defendant charged with driving while under influence of intoxicants had submitted, was admissible despite officer's failure to advise him of right to additional test by own doctor as required by statute, because defense counsel had not made proper objection to introduction of evidence of test at trial.

Elam v State, 286 Ark. 174, 690 S.W. 2d 352 (1985)

If a breath test is administered more than two hours after an accident, no presumption of intoxication is applicable; however, the result of the test is still admissible as evidence.

Wright v State (Ark.) CR81 Pulaski County Circuit Court, Fifth Division (1986).

After defendant was given a form that included both the Implied Consent and Miranda warnings, he refused to be tested and asked to call an attorney. Defendant was permitted to call an attorney, but was unable to contact one. The Appeals Court reversed the revocation of his license.

The Court held that because the defendant was permitted to call an attorney, a right not available under the Implied Consent Law, he was apt to be confused by the two conflicting sets of warnings. Thus, his refusal to be tested was entirely reasonable and understandable.

Johnson v State, 17 Ark. APP. 82, 703 S.W. 2d 475 (1986)

The court held that the introduction of the instrument certificate and the operator certificate of the officer who administered the breath test were sufficient foundation for the State to introduce breath test results.

Smith v State, 301 Ark. 569, 785 SW 2d, 465 (1990)

The court found that the statutory law did not require the machine operator's testimony, or his certificate, as a prerequisite to the introduction of chemical analysis test results.

Caffey v State, CA CR 92-1380 (1993)

The court held that the State must present evidence that the procedure used to draw blood was in accordance with requirements of Arkansas Department of Health regulations.

**IMPORTANT CASES FROM OTHER STATES
AND
US SUPREME COURT**

State v Downie, 569 A.2d 242 (N.J. 1990) cert. den. 111 S.Ct. 63 (1990)

Rejecting 2100:1 blood-breath ratio defense in DWI prosecutions.

Berkemer v McCarty, 468 US 796, 104 S.Ct. 3138, 82 L.Ed. 2nd 317, 35 CrL 3192 (1984)

Roadside rights.

PHARMACOLOGY

ALCOHOL

Alcohol is the generic name for a particular type of chemical compound. Most alcohols are miscible (infinitely soluble) in water. Within the general category of alcohols there are many individual chemical compounds. Each possesses different chemical properties. The different chemical structures of these various alcohols result in each chemical being metabolized by the body into different metabolic products. This is why each alcohol has a different level of toxicity. All alcohols are toxic. If a sufficient quantity is consumed or introduced into a human, death will result! Ethanol is the specific alcohol that is present in alcoholic beverages. Ethanol in its purest state is a colorless liquid that possesses an ethereal odor and produces a burning taste sensation. Unless otherwise specified, the term alcohol will be considered to mean ethanol in this text.

ALCOHOL PRODUCTION

Alcohol can be produced naturally through the process of fermentation or synthetically through industrial means. The usual method of synthetic production is from byproducts of petroleum refineries. Alcohol synthetically produced is not sold for human consumption and is therefore not taxed by the federal government. Commonly, this product is denatured (poisoned) to discourage the consumption of this nontaxed alcohol. Methanol, isopropanol, pyridine, and benzene are four denaturants frequently used to poison industrially produced ethanol. Consumption of denatured alcohol can be very unpleasant or lethal.

Beer usually contains about 5 percent ethanol by volume. Wine contains between 12 and 15 percent ethanol by volume. Wines of greater alcohol content are produced by either adding additional alcohol or blending the wine with another alcoholic product, such as brandy, whiskey, rum, vodka, etc. These are approximate values that vary not only from state to state, but also from one nation to another.

PROOF SYSTEM

In the United States the ethanol concentration of distilled beverages is shown by the proof system. The proof of an alcoholic beverage is equal to twice the ethanol concentration. As an example, 100 proof whiskey contains 50 percent ethanol by volume. Pure ethanol would be 200 proof because it is 100 percent ethanol.

ABSORPTION OF ALCOHOL

Ethanol can enter the human body in several different ways: injection, inhalation, and ingestion. Ethanol has not been demonstrated to accumulate in the body as a result of absorption through the skin. Injection of ethanol directly into the body is an extremely dangerous procedure because it produces a localized concentration of ethanol that can severely affect the heart and other vital organs (this phenomenon is referred to as the "bolus effect"). Another possible route for ethanol to enter the body is through inhalation of alcoholic vapors. When the alcoholic vapors come into contact with the lungs and mucous membranes lining the nasal passages and throat, then the ethanol can diffuse through these membranes into the blood. However, to reach significant levels of alcohol concentration requires exposure to a severely irritating environment for an extended period of time. It is, therefore, very unlikely that any individual would become intoxicated in this manner. The usual method for alcohol to enter the body is by ingestion of an alcoholic beverage. Ethanol is absorbed into the blood stream by diffusion through mucous membranes. Ethanol is not digested, but absorbed unchanged! The mouth, throat, and the entire gastrointestinal tract are all common sites of alcohol absorption. The anal canal, vaginal tract, and ureter are also lined with mucous membranes and could serve as possible sites for alcohol absorption (see Figure 3-1).

Once the alcoholic beverage enters the oral cavity, absorption begins immediately. Absorption continues as the beverage passes into the stomach and later into the small intestine. Residual alcohol is the alcohol that remains in the mouth and could affect a breath alcohol test. Alcohol can be reintroduced back into the oral cavity under certain conditions. If alcohol present in the stomach were regurgitated into the mouth, a portion of that alcohol would be absorbed by the mucous membranes lining the oral cavity. Regardless of how the alcohol is introduced into the mouth, residual alcohol will dissipate from the mouth cavity within 20 minutes. This is the reason for the 20-minute observation period in breath testing.

When the alcoholic beverage reaches the stomach, approximately 20% of the ethanol is absorbed through the stomach lining directly into the blood stream. This absorption from the stomach is unique because most other substances ingested cannot diffuse through the protective stomach lining.

The rate of absorption of ethanol through the stomach lining and its passage into the remainder of the gastrointestinal tract can vary due to several factors. The type of alcoholic beverage consumed can affect the absorption rate. Carbonated beverages tend to promote absorption while fatty or oily beverages tend to slow absorption. The concentration of ethanol in the alcoholic beverage consumed can also affect absorption. If the alcohol concentration in the stomach becomes too high, this can irritate the stomach lining and reduce the amount of alcohol absorbed from the stomach. The functioning of the pyloric sphincter, which controls the passage of the

stomach contents from the stomach to the small intestine, can also have an effect on the rate of ethanol absorption. The longer the ethanol is held in the stomach, the slower the overall rate of absorption. The most significant effect on alcohol absorption is the quantity of food substances ingested with or immediately prior to consumption of an alcoholic beverage. A large amount of food present in the stomach will serve to delay the absorption of ethanol. If no food is present in the stomach, the rate of ethanol absorption is faster (see Figure 3-2.) The small intestine is the site of the most rapid absorption of ethanol. All of these various factors combine with others to determine the specific absorption rate of a particular individual. Because of these various factors, absorption of ethanol can best be explained using general rules that describe the overall concepts, but may not be specific for a particular situation. Generally, complete absorption of a single alcoholic beverage on an empty stomach is accomplished in forty-five minutes to an hour after consumption.

DISTRIBUTION OF ALCOHOL

Once the ethanol is absorbed into the blood stream from the small intestine, it is transported to, and passes through, the liver. From the liver, the alcohol travels with the blood to the right side of the heart. The alcohol and blood then travel to the lungs and return to the left side of the heart. When the alcohol and blood leave the heart, they are distributed throughout the entire body. The blood leaving the heart reaches the brain tissue directly through the carotid arteries. Studies have shown that equilibrium between the arterial blood and the brain is reached extremely rapidly.

The concentration of ethanol in the various tissues depends upon the tissue water content. The greater the water content of a tissue, the greater its alcohol concentration will be in relation to other tissues. Water content varies according to the different kinds of tissue. For example, the water content of muscle is greater than the water content of bone. The tissue water content can also vary from one individual to another. An obese person has less water per pound of body weight than an emaciated (thin) person does because adipose (fat) tissue has a very low water content. Body water content also varies according to sex. Females have less water per pound of body weight than males because of the presence of adipose tissue in the breasts, buttocks, and thighs. Since the concentration of alcohol is directly proportional to the body water content (within the limits already discussed) the concentration will vary according to the body weight. As a rule, the heavier a person is the more alcohol that person must consume to reach a specific alcohol concentration in the body. The rate of consumption can affect the distribution of alcohol throughout the body.

ELIMINATION OF ALCOHOL

Ethanol is removed or eliminated from the body by oxidation and excretion. The process of oxidation in the liver accounts for the elimination of 90 to 95% of the alcohol consumed. As the alcohol is transported through the body with the blood, it passes again and again through the liver. During each pass through the liver, the enzyme Alcohol Dehydrogenase (ADH) burns a portion of the alcohol.

The process of excretion accounts for the elimination of 5 to 10 % of the alcohol consumed. A small percentage of ethanol consumed is excreted unchanged into the urine. The amount of ethanol in the urine is proportional, within certain limits, to the ethanol concentration in the blood. The urine is stored in the bladder prior to its elimination from the body. The bladder is very poorly supplied with blood and very little of the urine alcohol is reabsorbed back into the blood stream.

A portion of the ethanol consumed is eliminated from the body through the process of evaporation. Alcohol dissolved in perspiration is transported through the skin and then evaporated into the surrounding air. A portion of the ingested alcohol is also evaporated into the breath and then exhaled from the body. The exchange of alcohol from the blood to the breath occurs in the alveoli of the lungs. The alveoli are minute tissue sacs in the lungs that are richly supplied with blood from the heart. The membrane separation between the alveoli and the blood capillaries is permeable to certain vapors. This is also where the exchange of oxygen and carbon dioxide takes place.

Regardless of the method, elimination is a physiological process and as such is not significantly affected by exercise or stimulants such as caffeine. Therefore, neither stimulants nor exercise will affect the results of a breath alcohol test. Currently, the only proven method for sobering up is to allow sufficient time for the body to eliminate the alcohol.

The rate at which any one individual will eliminate ethanol is thought to be reasonably constant for that person. However, the rate of elimination may vary considerably from one person to the next. It usually falls in the range between 0.01 and 0.02 percent per hour, the average being 0.015 percent per hour (these figures are understood to mean percent or grams of ethanol per one hundred milliliters of blood). This information can only be used for approximations. It is not possible to draw specific conclusions as to what an individual's alcohol concentration was at some earlier point in time.

BREATH TESTING

Scientists agree that the best alternative to testing the brain for alcohol content (obviously not done on living subjects) is to test the arterial blood supply to the central nervous system. This can be done indirectly by testing a deep lung air sample. Many years of testing have validated the breath test as a reliable means of measuring the alcohol in the vascular system. Consequently, Arkansas adopted a law that provides that the breath alcohol concentration does not require conversion to blood alcohol concentration. Either test stands on its own. (It is not recommended that urine be used for alcohol analyses. Refer to Arkansas Regulations for Blood Alcohol Testing, 3.30 - 3.35 and 4.41.)

ALCOHOL CONCENTRATION CURVE

As noted before, body weight affects the alcohol concentration reached when a given amount of alcoholic beverage is consumed. Assuming the normal healthy male with a body weight of 150 pounds, the consumption of one drink could produce an alcohol concentration of 0.02 percent in the blood. Recall that the body is capable of eliminating alcohol at the average rate of 0.015 percent per hour or the equivalent of approximately one drink per hour. Therefore, in order to accumulate alcohol in the body, the rate of absorption must exceed the rate of elimination. When consumption stops and absorption has been completed, the alcohol concentration will gradually fall as the alcohol is eliminated by the liver. Figure 3-3 shows a generalized representation of an alcohol concentration curve. This curve can be divided into three phases: the absorption phase, the peak phase, and the elimination phase. The slope of each phase will vary according to the various factors affecting absorption, distribution, and elimination of alcohol. It is important to understand that absorption, distribution, and elimination occurs in all three phases. However, once absorption has produced a peak, the rate of elimination becomes greater than the rate of absorption. This results in a net decrease in the alcohol concentration in the body.

The best method of determining the alcohol concentration in the body, at any particular time, is to conduct an analysis of a suitable specimen. When a breath alcohol test is administered, the results demonstrate the alcohol concentration at the time the sample was collected.

TOXICOLOGY

INTOXICATION

When the alcohol concentration reaches a certain level, the individual concerned is intoxicated. Intoxication refers to the reduction or loss of normal physical and mental faculties. Intoxication is based upon measurable changes in an individual's performance of a specific task, such as operating a motor vehicle. The term "intoxication" should be separated from the more common term "drunk." The term "drunk" is used as a descriptive word denoting a particular type of observed behavior.

A tremendous amount of research has been performed to identify the progressive levels of intoxication, induced by ethanol, with regards to impairment in the operation of a motor vehicle.

The single fundamental fact regarding alcohol consumption is that increasing alcohol concentration results in increasing impairment of normal physical and mental faculties. Research has demonstrated that between 0.00 and 0.05 percent alcohol concentration, the majority of individuals do not demonstrate significant measurable impairment. Changes in personality and mental states are sometimes observed, and some persons do show impairment even at this low level of alcohol concentration. When the alcohol concentration increases to between 0.06 and 0.09 percent, the majority of individuals demonstrate some degree of measurable impairment. Judgment is the first area noticeably affected. Behavioral changes are sometimes observed and there is a loss of social inhibitions. Fine muscular coordination is affected and complex reaction time is lengthened. Complex reaction time is the time required for a person to perform two tasks almost simultaneously. Above 0.08 percent alcohol concentration, current research has shown that all persons are impaired with regards to the operation of a motor vehicle (see Figure 3-4). Increasing the alcohol concentration above 0.08 percent results in further impairment of normal physical and mental faculties.

As the alcohol concentration continues to rise, it presents a threat to life. Persons with an alcohol concentration of 0.30 percent or greater should be carefully observed and consideration given to seeking medical assistance. This level of alcohol may cause respiratory depression. An individual with an alcohol concentration of 0.40 percent or greater may lapse into a coma. This level of alcohol could result in death, although persons receiving medical attention have survived these levels.

TOLERANCE AND ETHANOL

The least understood phenomenon of alcohol consumption is tolerance. Tolerance is usually defined as the effect that results from the chronic use of a drug when larger doses become necessary to achieve the same desired effect. However, in discussing alcohol tolerance it is more convenient to reverse this definition and consider tolerance as the effect where the expected changes in behavior or impairment in performance of a specific task are not observed.

Because of the various aspects of alcohol tolerance, judging an individual's intoxication can be very difficult when based solely on visual observation. Interpersonal relationships and social prestige often influence one person's judgment of another's intoxication. The best method for determining intoxication is to analyze a suitable specimen to determine the alcohol concentration in that individual.

EFFECTS OF ALCOHOL

Ethanol acts as a depressant, not as a stimulant. It is this action of alcohol that accounts for its effects on the human body. The effects of alcohol can be demonstrated in all sensory-motor functions, and there are definite effects on the biochemical pathways of the body. Ethanol has such a broad-spectrum effect due to both the large quantity consumed and the site of action. It is not the alcohol in the peripheral areas of the body that impairs a person's coordination but the alcohol concentration in the brain tissue. It is in the brain that alcohol exerts its effects. In the brain, the alcohol acts to depress nerve transmission and to reduce coordination between various nerve centers. Depressing the nerve transmission results in the reduction of normal mental and physical faculties.

One of the first effects of alcohol is the impairment of judgment. Judgment is a general name given to various decision-making aspects of human behavior. Such topics as social inhibitions, self-evaluation, risk assessment, and perception of reality are all included under judgment. Alcohol depresses learned social and cultural inhibitions. This can result in an individual demonstrating inappropriate behavior or the expression of suppressed hostility. The depression of these inhibitions allows for the release of suppressed behavior that otherwise would have been concealed. Consumption of alcohol also results in an impairment of self-evaluation. Self-evaluation is the ability of an individual to judge his own behavior or performance in a particular situation. When individuals are required to perform a specific task, both in an alcohol-free state and later when intoxicated, these individuals will usually rate their performance when intoxicated as better than when alcohol-free. However, independent observation of these individuals clearly demonstrates that, when intoxicated, they performed the task slower and with more errors. These individuals have lost the ability to judge their own performance. Alcohol also has the ability to

create a feeling of euphoria. Euphoria is a sense of well being. Because of this artificial sense of well being, combined with an increase in the pain threshold, an intoxicated individual may ignore minor injuries. Serious injuries may be considered trivial with no attempt made to seek the necessary medical attention. Because of the induced state of euphoria, an intoxicated individual's perception of reality is altered. Another aspect of judgment affected by alcohol is risk assessment. Each person has the ability to determine what risks are acceptable to him and to understand the consequences of his actions. An intoxicated individual may accept risks that would be unacceptable when alcohol-free. Other aspects of an individual's mental faculties are also affected by alcohol. Intoxicated individuals may exhibit a loss of memory such as the inability to recite the alphabet. Intoxicated persons sometimes have difficulty in remembering the date and the time of day. They may demonstrate a shortened attention span and the inability to concentrate on a particular task.

Alcohol also has significant effects on the physical faculties. The sense of vision and visual perception, hearing, smell, and taste are all affected by alcohol. Alcohol can cause a blurring of vision because it depresses the coordination between the eyes causing them not to focus on the same spot. As the alcohol concentration is increased, this results in diplopia (double vision). Alcohol lengthens the glare recovery time. Glare recovery is the adjustment back to normal vision after a bright light has been shined in the eyes. Alcohol increases the time required for the eyes to make this necessary adjustment for night driving. When intoxicated, dim lights are more difficult to perceive and colors are harder to distinguish than when alcohol free. An intoxicated individual may demonstrate the effect called light fixation. The intoxicated person's attention becomes fixed on a flashing light. It is not uncommon for police vehicles to be struck by another vehicle driven by an intoxicated person because of this effect. An intoxicated individual will also demonstrate the effect known as Positional Alcohol Nystagmus. When an intoxicated individual places his head in a lateral position, it can cause rapid involuntary eye movements. This is why intoxicated persons sometimes complain of the room spinning around. Because of the rapid eye movements, the individual perceives that the room is moving. Alcohol affects visual perception resulting in the distorting of the estimation of distance. An intoxicated person will consistently overestimate distances and as one consequence will underestimate speed when operating a motor vehicle. Alcohol also impairs hearing perception. Although no direct effect has been shown on the physical mechanism of hearing, alcohol raises the minimal level of noise to which the person will respond. Noises, which are usually heard, are ignored due to lack of attention. One consequence of this is that an intoxicated individual will raise his voice to compensate for this perceived hearing loss.

Alcohol exerts its effects on other physical faculties. Muscular coordination is affected by alcohol. Alcohol depresses the nerve transmission to the muscle, which affects the performance of the muscle. At low levels of alcohol concentration, fine

muscular coordination is affected. As the alcohol concentration increases, larger groups of muscles are impaired, affecting gross muscular coordination. If the alcohol concentration continues to rise, the involuntary muscles are affected and respiration ceases, resulting in death. Because of the effects of alcohol on the nerves and muscles, reaction time is lengthened. At alcohol concentrations above 0.08 percent, the reaction time for performing a complex task is dramatically increased.

Alcohol can act as a vasodilator. This causes a relaxation of the blood vessel walls and results in more blood in the peripheral areas of the body (hands, feet, etc.). This effect is responsible for the flushed face observed in certain individuals who consume alcohol. This results in additional heat being lost from the human body because of the increase of blood near the body surface. Alcohol should not be given to a person suffering from exposure to cold because this may only further lower that person's body temperature.

Alcohol is a diuretic. Alcohol depresses the release of antidiuretic hormones, which results in less water being retained in the body. This effect is best demonstrated when the alcohol concentration is rising.

ALCOHOL AND OTHER DRUGS

Alcohol is not the only agent that could produce the effects already described. The situation will occasionally arise where an individual appears intoxicated but the breath alcohol test results are either negative or much lower than expected from the observed behavior. This situation could occur if the subject was a novice drinker who lacked the experience of coping with alcohol induced intoxication. However, the breath test operator should be aware that a combination of alcohol and drugs, drugs alone, or certain diseases or illness could produce symptoms similar to alcohol intoxication.

When alcohol is consumed in combination with other chemical agents, illicit or prescribed, the symptoms of alcohol intoxication may be altered. This may explain the situation where an individual appears very intoxicated but the breath alcohol test results demonstrate a low level of alcohol. Combining drugs or other chemical agents with alcohol can produce two types of effects: additive or synergistic. When a given dose of a drug is combined with a given dose of alcohol and the effect is equal to the combination of the two doses of the drug and alcohol, this is referred to as the additive effect, i.e., $1 + 1 = 2$. The combination of alcohol and phenobarbital is an example of the additive effect. The synergistic effect exists when a given dose of a drug is combined with a given dose of alcohol and each reinforces the other, i.e., $1 + 1$ no longer equals 2 but makes 4 or 5 units of effect. Valium is a drug that produces the synergistic effect when combined with alcohol. Drugs or other

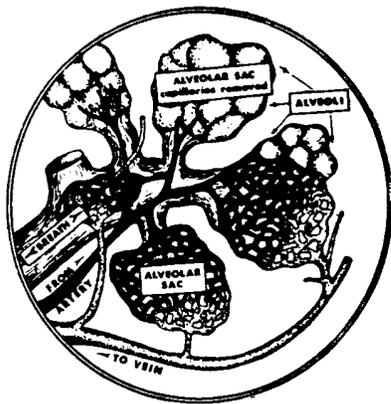
chemical agents, in the absence of alcohol, are capable of producing symptoms similar to alcohol intoxication. The breath alcohol test will not determine the presence of drugs other than alcohol. Other types of analyses must be performed to determine the presence of drugs or other chemical agents. Therefore, if an individual appears very intoxicated but the breath alcohol test results are negative, consideration should be given to the possibility that the individual is under the influence of drugs.

Certain illness or disease states are also able to produce symptoms similar to alcohol intoxication. Diabetes, epilepsy, and trauma are examples of conditions that may fall within this category. When individuals have a low or negative breath alcohol test result, the breath test operator should consider the possibility of a medical condition being present. If a medical condition is suspected, consideration should be given to seeking medical assistance.

COURSE OF ALCOHOL

- Mouth
- Esophagus
- Stomach
- Small Intestines
- Portal Vein
- Blood

To all parts of the body where it is stored in the water until returned by the blood to the liver to be oxidized.

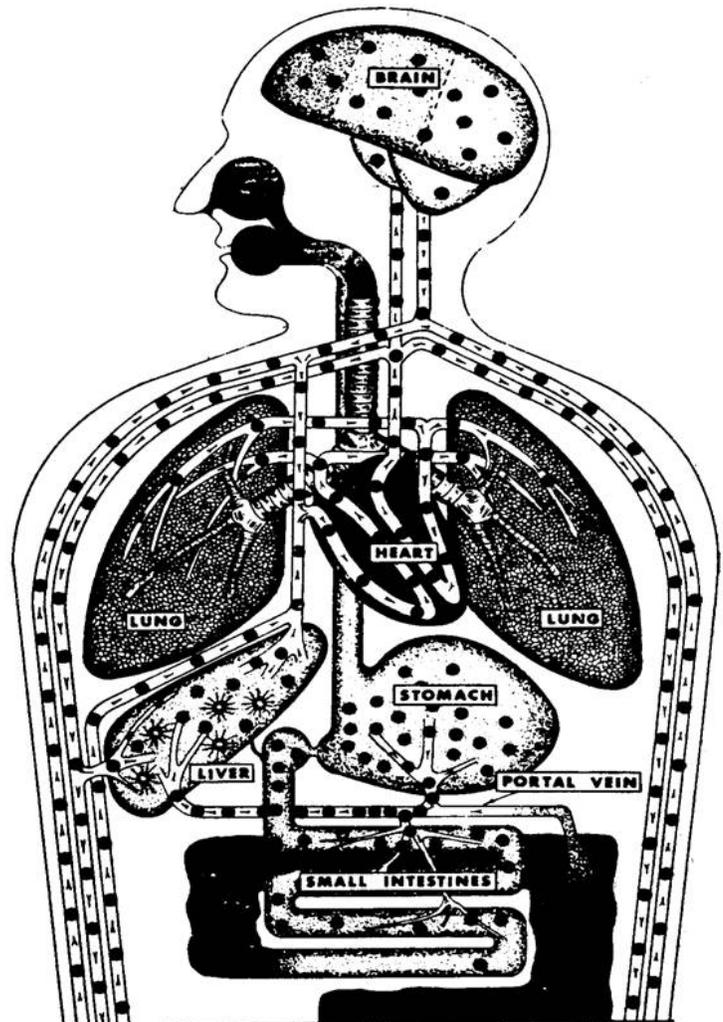


Primary Lobule of the Lung
(diameter of circle = 1/50 inch)

Blood vessels in the lungs end in networks of capillaries in the walls of the alveoli.

Alcohol from the blood is imparted to the deep lung breath.

Deep lung breath contains 1/2100 as much alcohol by volume as the blood



▲ Direction of Flow

- Alcohol
- * Alcohol being Oxidized

Figure 3-1.
A Representation of Human Anatomy as it Applies to Ethyl Alcohol Absorption and Distribution

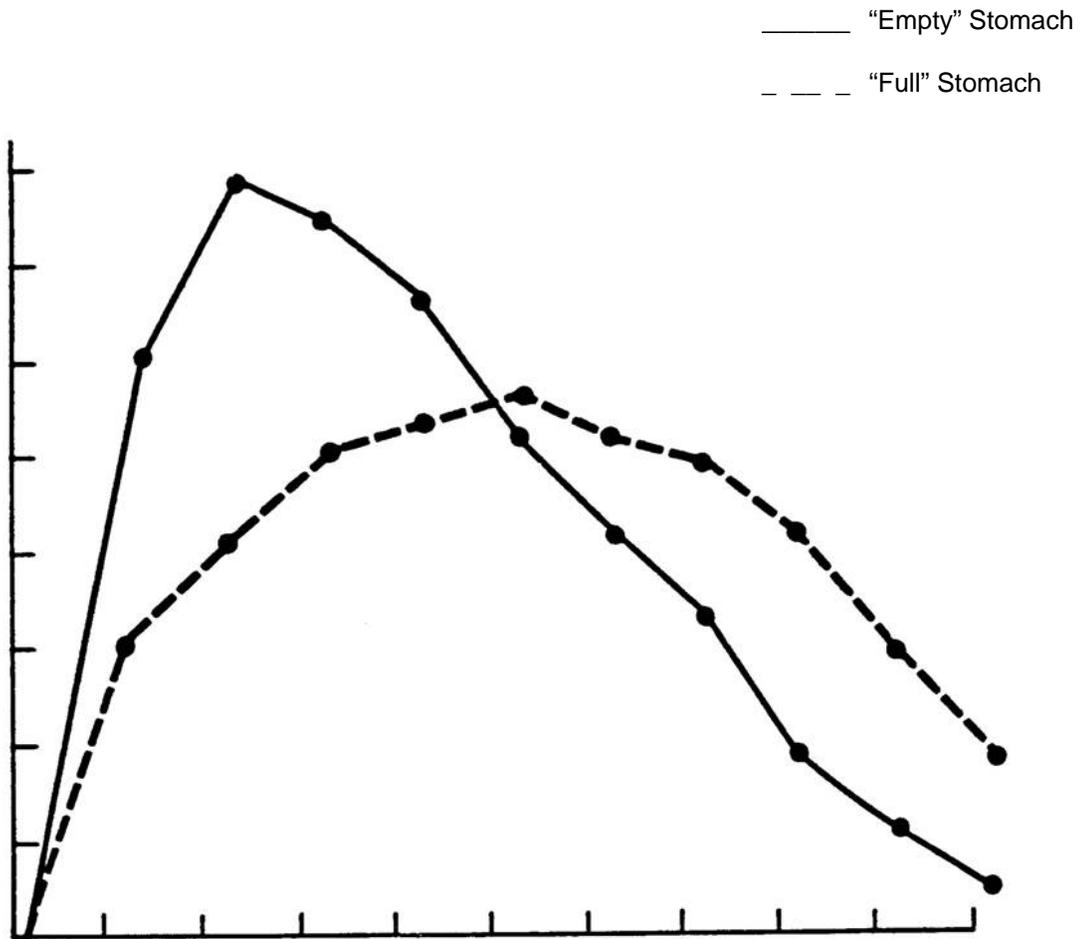
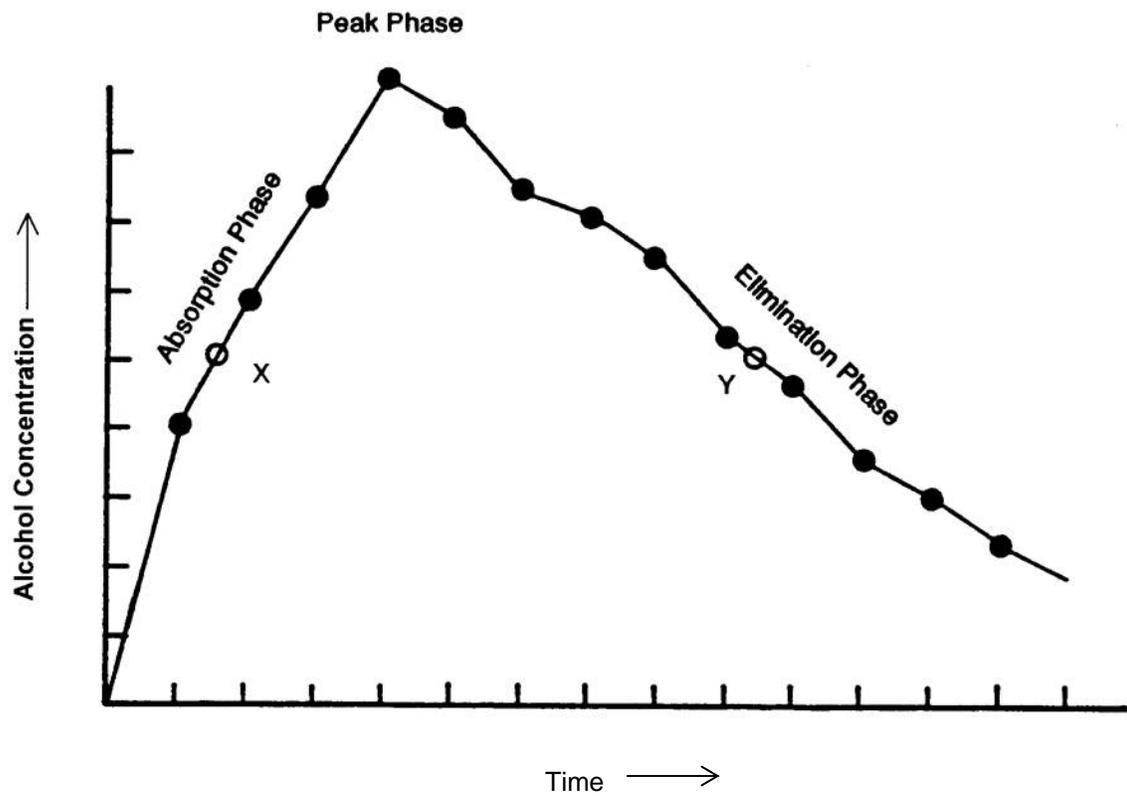


Figure 3-2.
Absorption of an Equal Dose of Ethyl Alcohol
in "Empty" vs. "Full" Stomach

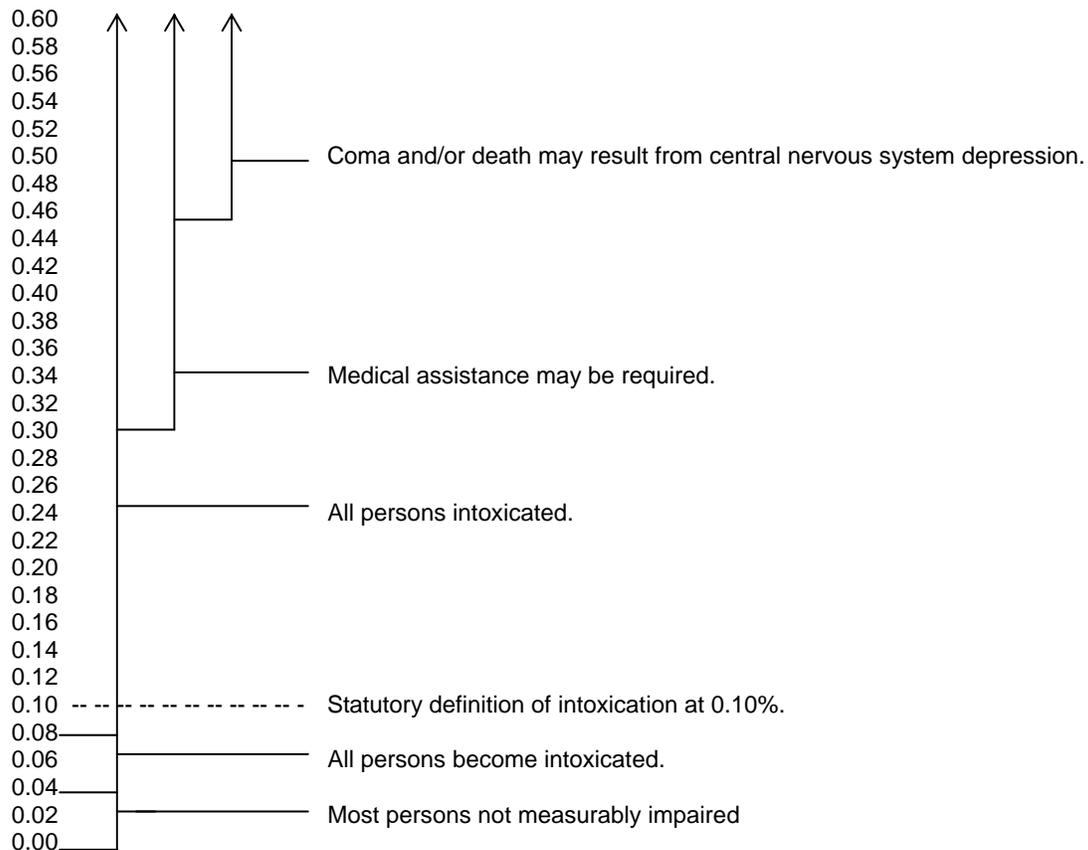


X and Y = The same alcohol concentration at different times.

Figure 3-3. Generalized Alcohol Concentration Curve

"The American Medical Association supports a policy recommending...adoption by all states of 0.05 BAC (Blood Alcohol Concentration) as per se evidence of alcohol-impaired driving...."

--Report from the Council on Scientific Affairs, AMA, Adopted by the AMA, at the Annual Meeting in Chicago, Illinois, June 1985



"A concentration of 80 milligrams of ethanol per 100 milliliters of whole blood (0.08% w/v) in any driver of a motor vehicle is indicative of impairment in his driving performance."

--National Safety Council Committee on Alcohol & Drugs, 1971

Figure 3-4. Intoxication Graph

ACCURACY CHECK AND DRY GAS

The EC/IR II uses a Dry Gas Standard for its accuracy checks, which is ruled by Boyle's Law: "as pressure increases and volume decreases the concentration of a gas will increase." The expected ethanol value of a dry gas standard changes with pressure (the lower the pressure the lower the reading), therefore it is necessary to calculate a correction factor to compensate for pressure changes. This correction factor is $[(P1) \times (V1)] / T1 = \text{Constant}$. Essentially, higher altitude means lower pressure and lower target value. Lower altitude means higher pressure and higher target value than in the mountainous regions.

EX: In North Arkansas (mountainous) if a cylinder has a gas reference value of .100 at sea level (760 mm HG), and the air pressure is 715 mm of HG at that location, then the gas value of .100 is $715/760 \times .100 = .094 = .094\text{g}/210\text{L}$.

EX: In Southeast Arkansas (delta) if a cylinder has a gas reference value of .100 at sea level (760 mm HG), and the air pressure is 755 mm of HG at that location, the gas value of .100 is $755/760 \times .100 = .0993 = .099 \text{g}/210\text{L}$.

The higher the elevation, the lower the pressure, thus the lower the target value.

The EC/IR II automatically calculates the target value of the dry gas sample using an internal barometric pressure sensor. The target value is printed on each ticket when a test is run. When the instrument performs the accuracy check during a test procedure it takes a sample of the dry gas standard and measures the alcohol concentration in the sample. The instrument then compares the reading against the target value. The external standard value must read within $+.003\text{g}/210\text{L}$ or $-.007\text{g}/210\text{L}$ of the target value in order for the test to proceed. If not, the instrument will end the test automatically and disable itself.

This accuracy check is performed during every test sequence. This establishes whether or not the instrument was accurate at the time the test was run.

The standards used in Arkansas are a mix of nitrogen and ethanol, mixed to specifications to provide a specific ethyl alcohol reading.

Temperature has no measurable effect over normal usage, as long as the temperature is above the dew point.

The dry gas standards used in Arkansas are National Institute of Standards and Technology (NIST) traceable, meaning the value is verified through NIST. This validates the value of the standard.

The tanks are good for approximately 300 tests, and have a two-year expiration date. Tank pressure, lot number, and expiration date are printed on the ticket each time a test is performed. The instrument will advise when tank pressure is becoming low and/or the expiration date is nearing. At this point, the Office of Alcohol Testing should be notified.

Tanks must be ordered and replaced by the Office of Alcohol Testing.



CAUTION: HIGH PRESSURE GAS. CAN CAUSE RAPID SUFFOCATION
Use and use with adequate ventilation. Use equipment rated for cylinder pressure
Close valve after each use and when empty. Use in accordance with the
Material Safety Data Sheet (MSDS). FIRST AID: IF INHALED,
move to fresh air. If not breathing, give artificial respiration. If breathing is difficult,
give oxygen. Call a physician. DO NOT REMOVE THIS PRODUCT LABEL.

ALTITUDE	VALUE	ALTITUDE	VALUE	ALTITUDE	VALUE
0	0.100	2750	0.090	5500	0.082
250	0.099	3000	0.090	5750	0.081
500	0.098	3250	0.089	6000	0.080
750	0.097	3500	0.088	6250	0.079
1000	0.096	3750	0.087	6500	0.079
1250	0.096	4000	0.086	6750	0.078
1500	0.095	4250	0.086	7000	0.077
1750	0.094	4500	0.085	7250	0.076
2000	0.093	4750	0.084	7500	0.076
2250	0.092	5000	0.083	7750	0.075
2500	0.091	5250	0.082	8000	0.074

0.100 BrAC at Sea level. If your Intoximeters tank is moved from one location to another and there is MORE THAN A 250 FOOT ELEVATION CHANGE, first determine the new elevation from the left column. Then move across the line to the right column to determine the new value of your Intoximeters tank.

BEER-LAMBERT LAW

Documented by Lambert in 1760 and later detailed by Beer, the Beer-Lambert Law applies to those breath-testing instruments, which utilize the principle of infrared absorption by ethyl alcohol. As infrared energy and a breath sample are introduced into the breath-test instrument, a measured amount of the infrared energy is absorbed. The energy absorbed is proportional to the amount of alcohol in the sample. The greater the amount of alcohol in the sample, the greater the absorption of infrared energy. This relationship exists regardless of the volume of the sample.

HENRY'S LAW

Named after William Henry (1774–1836), the English chemist who first reported the relationship, Henry's Law states that at a constant temperature, the amount of a given gas dissolved in a given type and volume of liquid is directly proportional to the partial pressure of that gas in equilibrium with that liquid. As it relates to ethyl alcohol, this means that when air comes into contact with a solution containing ethyl alcohol, the air will contain the same amount of ethyl alcohol as the solution.

When obtaining a breath sample, the Arkansas Regulations for Alcohol Testing require that a minimum of a twenty-minute observation period be conducted. The purpose of this observation period is to allow for any residual mouth alcohol to evaporate, so that upon obtaining a breath sample, any alcohol concentration shown will be from a deep lung sample, and not residual alcohol. This observation period is also a deprivation period. The subject to be tested is not to be allowed to take anything by mouth, and should be observed for any signs of wet-belching or regurgitation that could potentially re-contaminate the mouth. If this is observed, a new twenty-minute observation should be conducted.

BOYLE'S LAW

For a fixed amount of gas kept at a fixed temperature, P and V are inversely proportional (while one increases the other decreases). The law was named after chemist and physicist Robert Boyle, who published the original law in 1662.

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OPERATIONAL PRINCIPLES OF THE INTOXIMETER EC/IR II



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INTRODUCTION

The Intox EC/IR II is manufactured by Intoximeter, Inc. in St. Louis, Missouri. It brings together two separately controlled subsystems. The first is an analog control system that controls all analytical functions of the instrument. The second is an input/output control system that controls all aspects of the user interface as well as controlling various test sequences and protocols.

Please note that the information provided herein is not designed to make the operator an expert on the Intoximeter EC/IR II. It is to provide an understanding of what is happening inside the instrument so that the operator will be able to determine when the instrument is or is not operating properly.



METHODOLOGY

The Intox EC/IR II employs two distinct analytical techniques to measure alcohol concentration. The EC/IR II uses a fuel cell, (i.e., an electrochemical sensor) and a miniaturized non-dispersive infrared molecular absorption (IR) bench. The instrument employs both of these techniques because each offers different advantages to the sampling process.

The fuel cell sensor is specific to alcohol. It is a linear sensing device and can be calibrated with a simple one-point calibration ensuring stable calibration across the full range of its sensing capabilities. These features make this analytical device ideal for quantifying alcohol.

The IR sensor has several capabilities that the fuel cell sensor does not possess. The most important of these is that the IR sensor is able to make continuous determinations of alcohol concentration thus allowing the Intox EC/IR II to monitor a breath sample in (near) real time. While the IR sensor does not measure the sample to quantify the alcohol results, it helps determine the correct moment at which to take a sample of the breath and analyze it and to determine whether or not mouth alcohol is present.

In combination, these two analytical systems provide all the necessary information to make precise and accurate determinations of breath alcohol concentration as well as ensure that the instrument takes a high-quality sample. This sample is one made up of alveolar breath, not a shallow breath sample or one tainted by alcohol from the upper respiratory tract of the subject.

SAMPLING PUMP

For breath alcohol measurement, it is critical that you obtain a deep breath sample having a fixed volume. The patented system used in the Intox EC/IR II employs a piston as one wall of the measuring chamber. All breath drawn in by the sampling stroke is continuously exposed to the fuel cell surface. The EC/IR II, by using a short stroke piston operating between two mechanical stops, achieves sampling that is extremely quick and reproducible. The small space between the piston and the fuel cell keeps the alcohol in proximity to the fuel cell surface for fast response.

BREATH SAMPLE VOLUME

The breath sensing system in the Intox EC/IR II requires that sampling take place at the end of an exhalation if enough breath has been given to reach deep lung breath. The flow rate of the breath through the instrument is monitored continuously, and the microprocessor accumulates an integral of flow rate. Before reaching the required minimum volume, any reduction or cessation of flow rate causes the instrument to abort the test. The subject is then required to provide another breath sample. After the subject has provided the minimum volume, the instrument does not initiate an automatic sample until a reduction in breath flow signifies the approaching end of expiration. At that instant, the instrument takes a breath sample.

THE INFRARED ANALYSIS SYSTEM

Basic Principles

You can measure the infrared absorption of a gas by directing infrared light through a sample of the gas and measuring the incident light falling on a detecting device. The level of electrical signals produced by detecting devices provides quantitative indications of gas concentration. The instrument can process these signals to produce an output indicating the concentration of one or more of the constituents of the gas being analyzed. This type of gas analyzer operates on the principle that various gases exhibit substantially increased absorption characteristics at specific wavelengths in the infrared spectrum. Higher gas concentrations exhibit proportionally greater absorption.

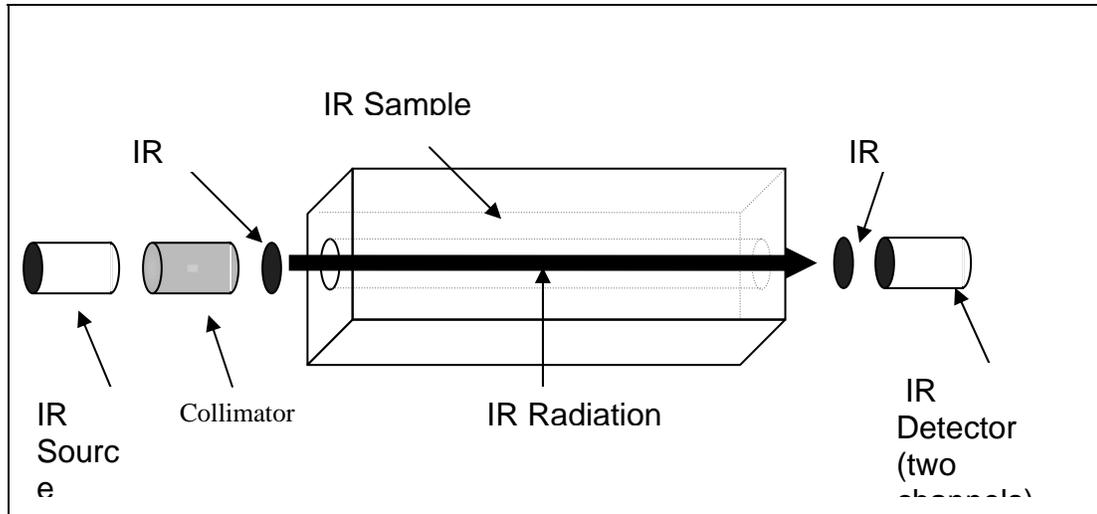
In the Intox EC/IR II, the detector contains two channels, one for carbon dioxide and one for ethanol. Each detector channel is composed of two thermopiles. A thermopile is an electronic device that converts thermal energy into electrical energy. Thermopiles do not measure the absolute temperature, but generate an output voltage proportional to a local temperature difference or temperature gradient. The detector develops a voltage that is proportional to the temperature difference between the hot and cold junctions.

Infrared energy is detected by both channels in the detector. Selectivity is controlled by the IR band pass filters used. These filters have been specified so that the carbon dioxide and ethanol filters pass energy bands absorbed by carbon dioxide and ethanol. With no ethanol or carbon dioxide present, both develop approximately the same output voltage. When ethanol is introduced into the sample, the radiation reaching the ethanol detector is reduced, but the carbon dioxide channel is unchanged. Similarly, the presence of carbon dioxide reduces the signal output from the carbon dioxide detector.

The amount of signal decrease in either the carbon dioxide or ethanol channels is proportional to the concentration of the gas of interest. If the difference between the IR ethanol signal and the carbon dioxide signal exceeds a threshold value, mouth alcohol is flagged and the test will be interrupted at that point. The signals follow the Beer-Lambert law, which defines the exponential relationship between concentration and signal strength.

The illustration below is a simplified diagram showing the infrared source, filters, and detectors. The two filters employed in the IR detector are narrow band pass filters at the following wavelengths:

Ethanol	3.45 microns with a width of 0.2088 microns
Carbon dioxide	4.26 microns with a width of 0.2088 microns

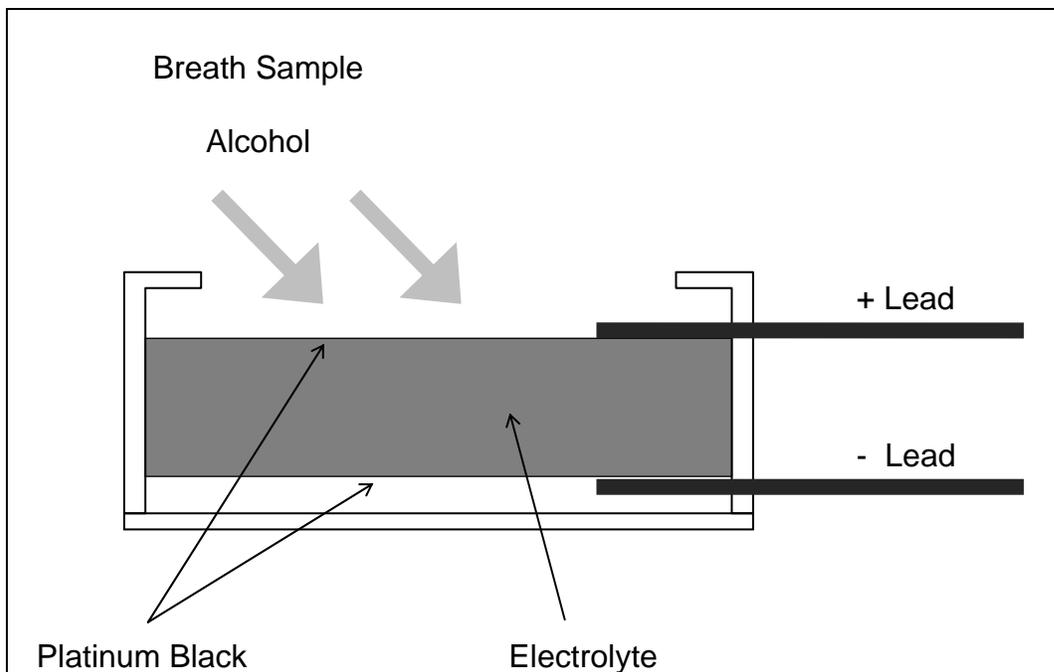


The infrared gas chamber is constructed of nickel-plated (0.0005 inch thickness) aluminum. The cell path length is 4 inches and the cell inside diameter is 0.375 inch. The cell is heated to a temperature of $44^{\circ}\text{C} \pm 2^{\circ}\text{C}$ to eliminate water condensation.

THE FUEL CELL ANALYSIS SYSTEM

The Fuel Cell Sensor

In its simplest form, the alcohol fuel cell consists of a porous, chemically inert disk coated on both sides with finely divided platinum (called platinum black). The porous disk is impregnated with an acidic electrolyte solution, with platinum wire electrical connections applied to the platinum black surfaces. The entire assembly mounts in a plastic case, which has a gas inlet that allows a fixed volume of deep lung breath to be introduced to the upper surface.

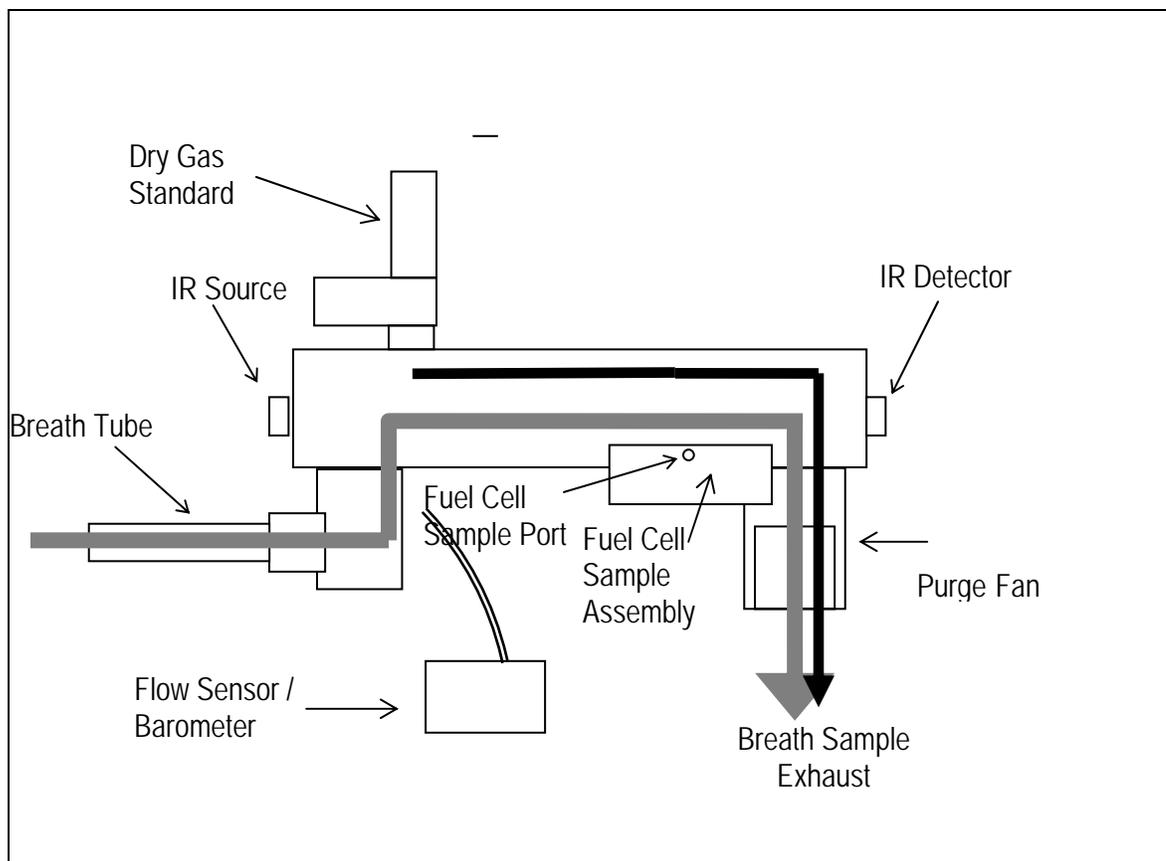


The reaction on the cell surface is basically this:

- Alcohol is converted to acetic acid, and in the process, produces two free electrons per molecule of alcohol so converted. This reaction takes place on the upper surface of the fuel cell.
- H^+ ions are freed in the process, and migrate to the lower surface of the cell, where they combine with atmospheric oxygen to form water, consuming one electron per H^+ ion in the process
- The upper surface has an excess of electrons, and the lower surface has a corresponding deficiency of electrons. If the two surfaces are connected electrically, a current flows through this external circuit to neutralize the charge. With suitable amplification, this current is a usable indicator of the amount of alcohol consumed by the fuel cell.

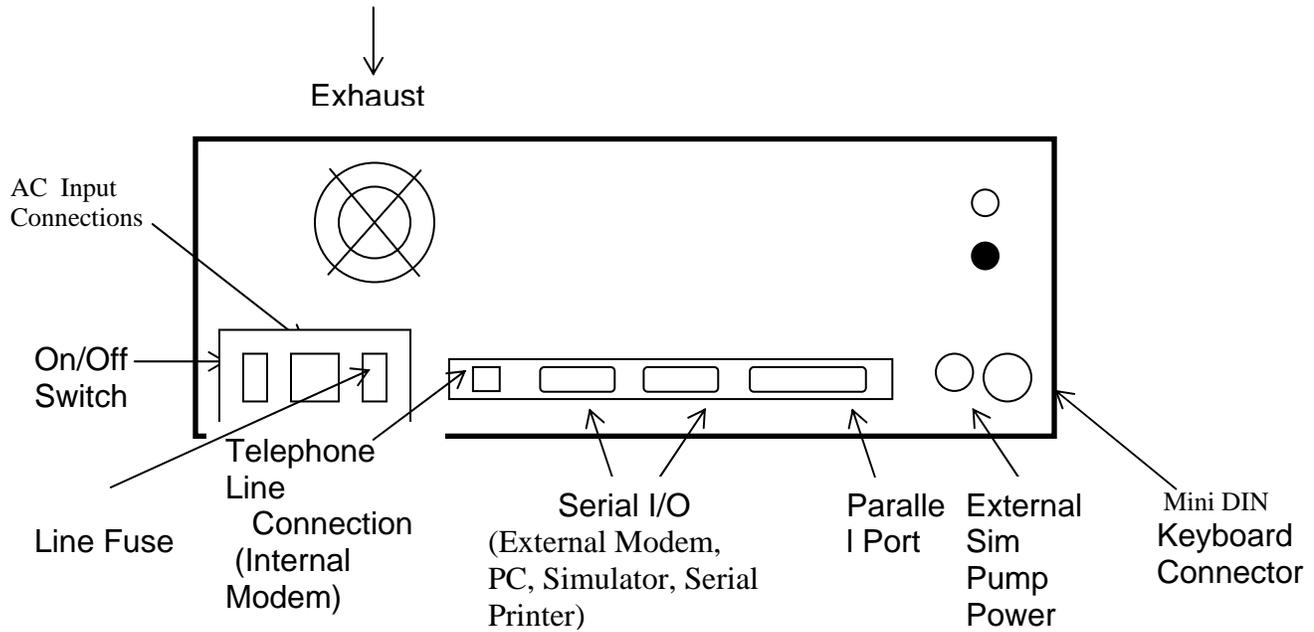
The two systems work in tandem to quantify the sample. While the infrared system is used to detect mouth alcohol but not quantity, the fuel cell system is used to determine the quantity, or value, of alcohol in the breath sample and not the presence of mouth alcohol.

Simplified Diagram of the Breath Sampling System That Contains Both Analytical Systems of the EC/IR II



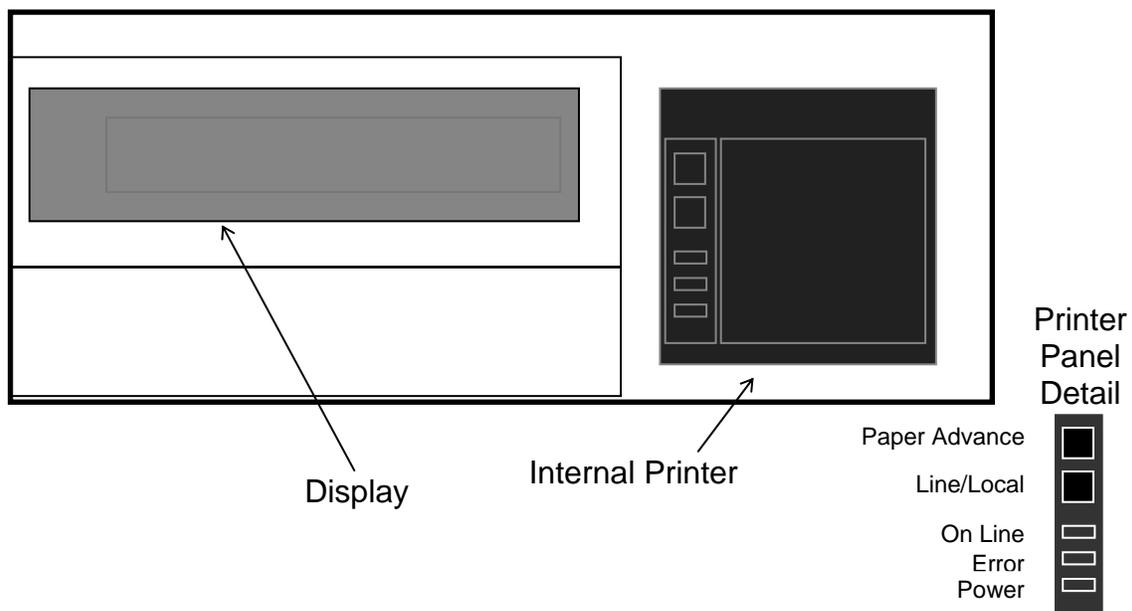
EXTERNAL COMPONENTS OF THE EC/IR II

Rear-Panel Connectors and Controls



FRONT PANEL AND KEYBOARD CONTROLS AND INDICATIONS

The Intox EC/IR II has two primary components: the analytical instrument itself, contained in a single cabinet that also houses a thermal printer, and a detachable keyboard. Except for advancing paper, operator commands from the keyboard control all instrument functions. A two-line display provides operator instructions and status information. Indicators on the built-in printer light when the instrument is on and also show off line/on line status.



The Two-Line Display

This display shows operating conditions, menu selections, on-line help, and measurement results. The default display after an initial warm-up period lists such things as date and time of day, instrument serial number, and an instruction to press the keyboard Enter key to start a subject test.

The Keyboard

The Desktop Intox EC/IR II uses a standard 101-key keyboard, the same kind used in most personal computers today. The Intox EC/IR II is equipped with a smaller AT-compatible keyboard, which is functionally equivalent to standard keyboard.



External Printer Controls and Displays

The external printer has two push buttons and several indicator lights. Refer to the Users Manual on the instructions and proper use of external printer. Should the external printer become inoperable, it is possible for the Office of Alcohol Testing to switch the instrument to the internal printer.



Internal Printer Controls and Displays

The built-in printer has two push-buttons and three indicators:

The PAPER ADVANCE push-button advances paper out of the printer when it is Off Line. Press the LINE/LOCAL push-button until the ON LINE indicator goes off. Then, hold down the PAPER ADVANCE push-button until you have advanced the required amount of paper. Be sure to put the printer in on line mode before starting subject tests.

The LINE/LOCAL push-button takes the printer off and on line when pressed. When off line, the ON LINE indicator goes out.

The ON LINE indicator lights when the printer is ready to print results.

The ERROR indicator lights when there is a printer fault: paper empty, door open, over-voltage or under-voltage condition, or print head over-temperature.



CAUTION: Do not place anything containing liquids on the instrument's top cover. This includes coffee cups and soft drink containers.

Uninterrupted Power Supply (UPS)

The EC/IR II must be plugged into a UPS device. **DO NOT** use a standard surge suppressor. **The printer is not to be connected to the UPS but to an external surge suppressor.**

Recommended size: 250-500 VA UPS. This may be obtained from any electronics store.

External Card Reader

In Arkansas, the EC/IR II is equipped with an external card reader. In order for the Senior Operator, or Operator, to initiate any type of a test, an operator card must be swiped through the card reader to begin the test sequence. Also, if the subject being tested has a driver's license, the driver's license may be swiped in order to enter the necessary information. If a driver's license is not available, the information may be entered manually using the attached key board.



TEST SEQUENCES AND PROCEDURES

Initiating a Subject Test

The Arkansas Regulations for Alcohol Testing require that a subject be observed for “no less than twenty (20) minutes prior to a test”.

To initiate a subject test on the EC/IR II, simply press the “ENTER” key and follow the on screen instructions:

Press “ENTER” and you will be prompted to:

SWIPE CARD

The operator card should be turned so that the bar code is facing the operator. The instrument is programmed so that you may only access those functions available for your level of certification.

If an operator’s certification has been revoked or suspended for any reason, the instrument will not accept the card and you may not access any functions.

If an operator loses their card, they may not access any functions nor run a test. The Office of Alcohol Testing should be contacted to report the loss of any card.
Never loan your card or borrow someone else’s card to run a test!

Upon scanning the operator card, the operator’s name and certification number will automatically be shown on the printed ticket.

After swiping your card you will then be prompted:

ENTER PIN

Enter the PIN number assigned to you then press return. Should the PIN number be misplaced or forgotten, contact the Senior Operator in Charge.

The instrument will then display:

EMPLOYED BY:

Enter the place of employment of the operator conducting the test. Press ENTER.

The instrument will then prompt:

OBSERVATION BEGAN: HH:MM

Enter the time at which you began the twenty-minute observation. Time must be entered in twenty-four hour (military time) format.

****Note: If the time entered is less than twenty minutes from the current time, at the completion of data entry, the instrument will give a countdown to the time at which it is acceptable to test the individual.**

Press Enter.

The instrument will then display:

TRAFFIC RELATED: Y/N

Enter Y for Yes or N for No. Press Enter.

If the answer is “No”, the instrument will prompt:

JUVENILE (Y/N)

If you answer YES to this prompt, the instrument will automatically insert the word “JUVENILE” for the name since the juvenile is protected under the Freedom of Information Act if the offense is NOT traffic related.

If the incident is traffic related, the juvenile question is skipped. However, once the test record is produced, “Juvenile:N” will appear on the test record. This will indicate that the juvenile question was not asked as the information is not protected if the offense is traffic related.

Press ENTER and the instrument will prompt for the driver’s license to be swiped. If the subject has a driver’s license or state issued identification card, swipe it with the bar code facing the operator, and the subject’s name, driver’s license number, birth date, and state of issuance.

If the individual does not have a driver’s license or ID card, press ENTER and manually fill all requested information.

If the driver’s license is read, the instrument will display:

SUBJECTS LAST NAME: LLLLLLLLLL

Press ENTER and the instrument will display:

SUBJECTS FIRST NAME: LLLLLLLLLL

Press ENTER and the instrument will display:

SUBJECTS MIDDLE INITIAL: L

Press Enter and the instrument will then display:

DATE OF BIRTH: MM/DD/YYYY

You must enter the four-number designator for the year. Also, if for some reason the birth date cannot be determined, the instrument will allow for you to skip this question by pressing ENTER.

Press ENTER and the instrument will display:

DRIVER'S LICENSE NUMBER:NNNNNNNNNN

The instrument will allow for entry of up to 23 alpha and numeric characters in this field. If a driver's license or identification card was scanned, the numbers will automatically be entered. If the individual has a driver's license but it is not available, the number may be manually entered. If the individual does not have a driver's license, press ENTER to skip this question. If the individual has a suspended, revoked, or dummy number, enter the information.

Press ENTER and the instrument will display:

STATE OF ISSUANCE: LL

This prompt is for the state of issuance of the driver's license. If manually entering data, simply enter the two letter postal code abbreviation for the state of issuance (AR for Arkansas, TX for Texas, MO for Missouri, etc.). If the individual does not have a driver's license, simply press ENTER to skip this question.

Press ENTER and the instrument will display:

SUBJECT INVOLVEMENT: DRIVER/PASSENGER/PEDESTRIAN

D will indicate that the individual was the driver, P will indicate passenger, and Pe will indicate that the individual was a pedestrian.

Press ENTER and the instrument will display:

DATE OF INCIDENT: MM/DD/YYYY

Enter the date the incident occurred and again enter all four numbers of the year.

Press ENTER and the instrument will display:

TIME OF INCIDENT: HH:MM

Enter the time at which the incident occurred in twenty-four hour format (military time).

Press ENTER and the instrument will display:

COUNTY: LLLL

Enter the first four letters of the county where the incident occurred with the following exceptions: Lee for Lee County, Hot for Hot Spring County, Van for Van Buren County, and STFR for St. Francis County.

Press ENTER and the instrument will display:

ACCIDENT : Y/N

If the answer to this question is No, press ENTER and the instrument will eliminate the following questions.

If Yes, press ENTER and the instrument will display:

INJURY: Y/N

and

FATALITY: Y/N

Press ENTER and the instrument will display:

REQUESTED BY: (L/S/D/O)

Enter L for Law Enforcement if law enforcement is requesting the test, S for Subject if it is a subject requested test, D for DOT if it is a Department of Transportation requested test, and O for other if it does not meet any of the preceding criteria (court ordered, probation/parole, etc.).

Press ENTER. The instrument will prompt to Press Enter to verify or review your information, or press the space bar to continue with the test. Review all information at least once and make corrections as necessary. To make a correction, simply re-type the data. Upon completion press the space bar and the instrument will begin the automatic test procedure.

Automatic Test Procedure

After all information has been entered and the SPACE bar pressed, the EC/IR II will assign a test number to the test, which upon printing will appear in the upper portion of the test record. This test number should be entered in the logbook. The instrument will then conduct a short diagnostic test to ensure that all components are functioning properly. The result of this diagnostic test is shown on the ticket as pass or fail.

If all components are functioning properly, the instrument purges itself to make sure there are no contaminants in the system or around the EC/IR II, then performs a blank check and performs the external standard check, testing a sample of the dry gas standard. As long as the external standard reads to within $+0.003$ and -0.007 of the target value, the instrument will continue the test. If the external standard is outside of this range, the instrument will abort the test and a Senior Operator should be contacted.

After analyzing the dry gas standard, the instrument will purge itself in order to cleanse the system.

After checking for a blank sample, the instrument proceeds to "Please Blow." At this time the breath tube should be prepared for the subject to blow into.

Taking the Breath Sample

Taking a clean mouthpiece, tear the plastic away from the mouthpiece, and using the plastic to hold it, place the mouthpiece onto the breath tube, and present it to the subject to blow into. Instruct the subject to blow steadily and continuously into the mouthpiece until instructed to stop. If the subject is refusing to provide the sample, simply press "R" during anytime of the "Please Blow" sequence to generate a refused test record.

A solid tone will be present as the subject blows if an adequate breath sample is being provided. Two bars will show on the display while obtaining the sample. The top bar will indicate the flow rate of the sample while the bottom bar shows the volume of breath provided. If too little pressure is maintained or volume provided, the instrument will stop the sample and show "**Insufficient Sample,**" and after purging will provide another opportunity to obtain the sample. The instrument will allow for up to three attempts before aborting the test.

After the instrument has accepted the sample, immediately remove the mouthpiece from the breath tube and discard it.

The instrument will analyze the first sample, purge, and conduct a blank test. It then will display a clock indicating the amount of time remaining before obtaining the second sample. There will be a minimum of two minutes between the two samples.

When prompted again to "Please Blow," follow the previous instructions for obtaining a sample. **Use a clean mouthpiece for each sample.** If the subject refuses to provide the second sample, press "R" for refused. Two completed samples are required for a completed test.

After analyzing the second sample, the instrument takes the two sample results and reports the lower of the two samples as the alcohol result, as long as the two samples are within .020 of each other. If the samples are outside of .020 of each other, the instrument will show "Results not Within .020 Re-Test," abort the test, and a new test sequence must be started.

After reporting the test result, the instrument will display "Database Update: Success" to show that the test record has been saved to the instrument's database.

After the test is completed, the printer will produce three copies of the test record. There will be three places requiring signatures at the bottom of the test record:

- 1) Operator Signature: Requires the instrument operator's signature.
- 2) Observed by: Requires the signature of the person who conducted the 20 minute observation.
- 3) Rights Given By: Requires the signature of the officer who advised the subject of the Implied Consent Rights.

After completing the test, the test shall be entered in the logbook. The test number will be listed in the header of the ticket and should be entered exactly as it appears on the ticket. This allows for producing a copy of the test record at a later date if needed.

The "Final Result" and "Final Result Time" should be entered for the time of test and test result.

Intox EC/IR-II: Subject Test

Installation Certificate Number: 089

State of Arkansas
 MONTGOMERY CO. S.O.
 Serial Number: 011214 Test Number: 34
 Test Date: 02/02/2010
 Operator's Name: Parsons, Kristen M
 Operator's Certification No.: 00017
 Place of Employment: ADH
 Observation Began: 13:30
 Traffic Related: No
 Juvenile: No
 Subject's Name: RO EIGHT, POINT Z
 Subject's Date of Birth: 00/00/0000
 Driver's License Number:
 State of Issuance: AR
 Subject Involvement: Driver
 Date of Incident: 02/02/2010
 Time of Incident: 12:30
 County Occurred: PULA
 Accident: No
 Injury Involved: N/A
 Fatality Involved: N/A
 Requested By: Other
 Dry Gas Target: .099
 Lot Number: AG930803 Exp Date: 11/04/2011
 Tank Pressure: 1115 psi

Test	g/210L	Time
DIAG	Pass	14:16
BLK	.000	14:17
STD	.099	14:18
BLK	.000	14:18
SUBJ	.077	14:19
BLK	.000	14:20
SUBJ	.076	14:22
BLK	.000	14:23

Smpl #	Durn (sec)	Vol (cc)	Time
1	5.36	1860	14:19
2	4.47	1788	14:22

Success

Final Result Time: 14:22 CST
Final Result: .076

Operator Signature

Observed By:

Rights Read By:

Intox EC/IR-II: Subject Test

Installation Certificate Number: 000

State of Arkansas
AR DEPT OF HEALTH
OAT

Serial Number: 010690 Test Number: 144
Test Date: 07/01/2009

Operator's Name: Operator, Oliver O
Operator's Certification No.: CDB-DBSAPTB
Place of Employment: ADH
Observation Began: 13:30
Traffic Related: Yes

Juvenile: No
Subject's Name: SAMPLE, HARVEY
Subject's Date of Birth: 01/15/1948
Driver's License Number: 999041683

State of Issuance: AR
Subject Involvement: Driver
Date of Incident: 07/01/2009

Time of Incident: 12:00
County Occurred: JEFF
Accident: No

Injury Involved: N/A
Fatality Involved: N/A
Requested By: Law

Dry Gas Target: .098

Lot Number: AG802101 Exp Date: 01/20/2010
Tank Pressure: 860 psi

Test	g/210L	Time
DIAG	Pass	14:13
BLK	.000	14:14
STD	.092	14:15
BLK	.000	14:15
SUBJ	.099	14:16
BLK	.000	14:17
SUBJ	.172	14:19
BLK	.000	14:20

Smpl #	Durn (sec)	Vol (cc)	Time
1	3.83	1685	14:16
2	4.21	1830	14:19

Results Not Within .020 - Retest

Final Result Time: 14:20 CDT
Final Result: N/A

Operator Signature

Observed By:

Rights Read By:

Intox EC/IR-II: Subject Test

Installation Certificate Number: 001

State of Arkansas
AR DEPT OF HEALTH
OAT

Serial Number: 010690 Test Number: 155
 Test Date: 07/02/2009
 Operator's Name: Administrator, Adam A
 Operator's Certification No.: POLLYWOG
 Place of Employment: ADH
 Observation Began: 13:00
 Traffic Related: Yes
 Juvenile: No
 Subject's Name: SAMPLE, HARVEY
 Subject's Date of Birth: 01/15/1948
 Driver's License Number: 999041683
 State of Issuance: AR
 Subject Involvement: Driver
 Date of Incident: 07/02/2009
 Time of Incident: 11:30
 County Occurred: JEFF
 Accident: No
 Injury Involved: N/A
 Fatality Involved: N/A
 Requested By: Law
 Dry Gas Target: .099
 Lot Number: AG802101 Exp Date: 01/20/2010
 Tank Pressure: 816 psi

Test	g/210L	Time
DIAG	Pass	13:43
BLK	.000	13:44
STD	.092	13:44
BLK	.000	13:45
SUBJ	.***	13:45

Test refused

Final Result Time: 13:46 CDT
Final Result: N/A

Operator Signature

Observed By:

Rights Read By:

Intox EC/IR-II: Subject Test

Installation Certificate Number: 001

State of Arkansas
AR DEPT OF HEALTH
OAT

Serial Number: 010690 Test Number: 156

Test Date: 07/02/2009

Operator's Name: Administrator, Adam A

Operator's Certification No.: POLLYWOG

Place of Employment: ADH

Observation Began: 13:00

Traffic Related: Yes

Juvenile: No

Subject's Name: SAMPLE, HARVEY

Subject's Date of Birth: 01/15/1948

Driver's License Number: 999041683

State of Issuance: AR

Subject Involvement: Driver

Date of Incident: 07/02/2009

Time of Incident: 12:00

County Occurred: JEFF

Accident: No

Injury Involved: N/A

Fatality Involved: N/A

Requested By: Law

Dry Gas Target: .099

Lot Number: AG802101 Exp Date: 01/20/2010

Tank Pressure: 811 psi

Test	g/210L	Time
DIAG	Pass	13:59
BLK	.000	14:00
STD	.092	14:01
BLK	.000	14:01
SUBJ	.169	14:02
BLK	.000	14:03
SUBJ	.***	14:04

Smpl #	Durn (sec)	Vol (cc)	Time
1	3.65	1676	14:02

Test refused

Final Result Time: 14:05 CDT

Final Result: N/A

Operator Signature

Observed By:

Rights Read By:

Practice Tests and Demonstrations

It is recommended, in order to maintain proficiency with the instrument, that operators periodically perform a practice test if not testing regularly. Also, should it become necessary, it is permissible to perform a demonstration test on the instrument (i.e., judges, prosecutors, etc.).

To perform a demonstration or practice test, initiate a subject test as normal.

When prompted to swipe the driver's license, press ENTER.

When prompted for "Last Name" type the word TEST. Press ENTER.

When prompted for "First Name" type the word TEST. Press ENTER.

Press ENTER to skip "Middle Initial."

Press ENTER to skip "Driver's License", "State of Issuance", and "Date of Birth".

Enter other information as necessary.

Upon completion, make the appropriate log entry, using the word TEST for the subject's name, and note in the Remarks column that it was a practice or demonstration test.

File a copy of the ticket.

COPY

An operator may produce a copy of the last test performed on the instrument by pressing "P" on the keyboard, then pressing the space bar. When producing a copy, it is not to be entered in the logbook.

DISPLAY LAST TEST

The instrument will allow an operator to view the last test performed on the display screen. To do so, press "D" on the keyboard and use the "down" arrow key to scroll through the test.

Intox EC/IR-II: Subject Test

Installation Certificate Number: 001

State of Arkansas
AR DEPT OF HEALTH
OAT

Serial Number: 010690 Test Number: 157
Test Date: 07/06/2009

Operator's Name: Operator, Oliver O
Operator's Certification No.: CDB-DBSAPTB
Place of Employment: ADH
Observation Began: 08:00
Traffic Related: No
Juvenile: No

Subject's Name: TEST, TEST
Subject's Date of Birth: 00/00/0000
Driver's License Number:

State of Issuance: AR
Subject Involvement: Pedestrian
Date of Incident: 07/06/2009
Time of Incident: 08:00

County Occurred: GRAN
Accident: No

Injury Involved: N/A
Fatality Involved: N/A

Requested By: Law
Dry Gas Target: .099

Lot Number: AG802101 Exp Date: 01/20/2010
Tank Pressure: 791 psi

Test	g/210L	Time
DIAG	Pass	08:45
BLK	.000	08:46
STD	.093	08:47
BLK	.000	08:47
SUBJ	.000	08:48
BLK	.000	08:49
SUBJ	.000	08:51
BLK	.000	08:51

Smpl #	Durn (sec)	Vol (cc)	Time
1	6.29	2723	08:48
2	5.88	2336	08:51

Success

Final Result Time: 08:51 CDT
Final Result: .000

Operator Signature

Observed By:

Rights Read By:

Monthly Proficiency Tests

Monthly proficiency samples and testing are a means by which the Office of Alcohol Testing can monitor the accuracy of the breath testing instrument. The monthly proficiency test result must meet the standard of accuracy of +/- .01. The monthly proficiency sample should be received each month by the 5th of the month. The sample should be tested and the results submitted by the 15th of the month. If the sample results are not received by the 15th, the instrument may be placed out of service until the Office of Alcohol Testing is contacted. Only Senior Operators may perform the monthly proficiency test.

When a monthly proficiency sample is received from the Office of Alcohol Testing, the Senior Operator should check in the box for the monthly proficiency test form and the solution. The sample number will be indicated on the form and on the bottle. The solution should be allowed to come to room temperature and then poured into the simulator. Check the simulator for a good seal, then turn it ON, and allow the solution to come to operating temperature. The sample should be allowed to warm for at least 45 minutes.

The proficiency sample will be analyzed twice as part of the same test procedure. The automatic test procedure will be the same as for a subject test.

- To initiate the proficiency test the Senior Operator should press F-11.
- After pressing F-11, the Senior Operator will be prompted to swipe their operator card and enter their PIN. Enter the PIN and press ENTER.
- The instrument will then display "Sample Number/Test ID". Enter the proficiency test sample number found on the proficiency test form and on the bottle. Press ENTER.
- The instrument will then display "Press Space to Begin" or ENTER to verify. Review all data at least once, making any corrections necessary. When satisfied with the entered data, and returning to this prompt, press the space bar to begin the test. The test sequence will follow the same format as a subject test.
- **When the instrument displays Please Blow (NOT BEFORE!) on the display, connect the breath tube to the front port (Vapor Out) of the simulator. Check connections carefully to avoid pulling solution into the instrument. Place a small length (approx three inches) of hose to the top port (Pump In) of the simulator and place a mouthpiece into this hose. Blow through the simulator with adequate pressure and volume to satisfy the requirements of the instrument.**

As soon as the instrument has accepted the sample, immediately remove the breath tube from the simulator. Again, the instrument will follow the same sequence as a subject test.

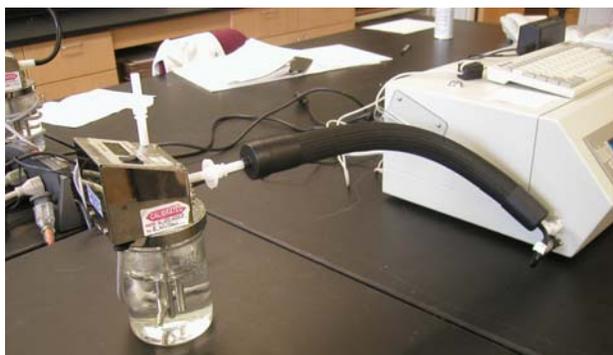
When prompted to Please Blow the second time, follow the same procedure as on the first sample.

If the test results are outside of .020, the instrument will show "Results not within .020" and the test must be re-run. If a status message is indicated on the test record reference the status messages section of your manual.

Once the results are printed, use the Final Result and time for the log entry. Record the Final Result on the Proficiency Test reporting form, and mail or fax the form to Alcohol Testing so that it is received by the 15th of the month in order to maintain certification.

Once the sample has been analyzed, and the results verified, the solution may be disposed of, the simulator rinsed with distilled water and dried, and stored until the next month.

If the solution is kept, the simulator should be left in the ON position. The plastic sample bottles should be maintained and given to Office of Alcohol Testing personnel at the next inspection. Copies of the test results should be filed and maintained in a retrievable manner. Test results should be entered in red ink.



Intox EC/IR-II: Proficiency Test

Installation Certificate Number: 001

State of Arkansas
AR DEPT OF HEALTH
OAT

Serial Number: 010690 Test Number: 131
Test Date: 06/24/2009 Test Time: 10:33 CDT
Sample No./Test ID: G0401
Operator's Name: Supervisor, Sally S
Operator's Certification No.: 123-123456789012345678
Place of Employment: ADH
Dry Gas Target: .094
Lot Number: AG802101 Exp Date: 01/20/2010
Tank Pressure: 933 psi

Test	g/210L	Time
DIAG	Pass	10:33
BLK	.000	10:34
STD	.092	10:35
BLK	.000	10:35
SUBJ	.080	10:37
BLK	.000	10:38
SUBJ	.079	10:40
BLK	.000	10:41

Smpl #	Durn (sec)	Vol (cc)	Time
1	7.89	2494	10:37
2	2.62	809	10:39
3	4.18	1744	10:40

Success

Final Result Time: 10:40:44 CDT
Final Result: .079

Operator Signature

Supervisor Tests

A Senior Operator must perform a supervisor test to verify the value of the dry gas standard (external standard) and the operation of the instrument. You may run as many supervisor tests during the month as you need; HOWEVER, a supervisor test MUST be done every 31 days. The supervisor test may be run by any Senior Operator. If a supervisor test is not run within the 31 days, the instrument will disable itself until a test is run.

To initiate a supervisor test, press the F-3 key on the top of the keyboard. The instrument will instruct to swipe your operator card. Only a Senior Operator card will allow access. After swiping the card, enter the PIN number and press ENTER.

Operator information will be imported to the instrument from the operator card. Press ENTER to navigate through each field.

- The instrument will then display “Press Space to Begin/Enter to Verify.” If all information has been entered properly, press “Space” to begin the test.

The instrument will perform a diagnostic test to ensure that everything is working properly. Upon successful completion of the diagnostic test, the instrument will analyze the dry gas standard three times. The instrument will conduct a purge and blank test after each sample. After analyzing the three samples, the instrument will print out the test results. The instrument averages the three samples and compares the result against the standard concentration.

The information printed at the bottom of the evidence ticket includes:

- N is the number of external standard tests;
- SIM. Is the standard concentration;
- AVG is the arithmetic mean of the values obtained from those tests;
- S.D. is standard deviation, the root mean square of the deviations of the values from the mean; and
- S.E., systematic error, is the difference between the known ethyl alcohol value and the mean expressed as a percent of the known value.

When making the corresponding log entry, the average “AVG” should be entered for the test result, entering all three digits to the right of the decimal, and in the “Remarks” column note the barometric pressure and dry gas target.

Intox EC/IR-II: Supervisor Test

Installation Certificate Number: 001

State of Arkansas

AR DEPT OF HEALTH

Serial Number: 010690 Test Number: 113

Test Date: 06/11/2009 Test Time: 14:45 CDT

Operator's Name: Supervisor, Sally S

Operator's Certification No.: 123-123456789012345678

Place of Employment: ADH

Dry Gas Target: .093

Lot Number: AG802101 Exp Date: 01/20/2010

Tank Pressure: 1085 psi Barometric Pressure: 746 mmHg

Test	g/210L	Time
DIAG	Pass	14:45
BLK	.000	14:45
STD	.093	14:46
BLK	.000	14:48
STD	.092	14:48
BLK	.000	14:50
STD	.092	14:50

Success

N = 3

CYL = .093 g/210L

AVG = .092 g/210L

S.D. = .000 g/210L

S.E. = 1.08%

Operator Signature

Diagnostic Test

The instrument automatically performs a diagnostic test of all operating components with every test run. This will be noted on the test record as "DIAG" followed by "PASS" or "FAIL." The instrument does baseline testing of the components, checks temperatures of the components, and the blank air. These checks will be indicated on the print out with PASS or FAIL. Should the instrument indicate a FAIL, the instrument will abort the test.

In addition to the automatic diagnostic test, **a Senior Operator is required to perform an individual diagnostic test monthly, not to exceed 31 days.** If the diagnostic test is not performed, the instrument will not allow tests to be performed until the diagnostic test has been performed. To perform a diagnostic test, the Senior Operator should press Control F-11 to initiate.

After pressing Control F-11, the instrument will prompt to swipe the operator card, enter the PIN, the place of employment, and then will begin the test.

When conducting the independent diagnostic test, each item will be listed on the printout followed by "PASS" or "FAIL". Refer to page 4-27.

The diagnostic test should be entered in red ink in the logbook, logging the test number from the top of the ticket, and using the test time indicated in the header of the ticket.

Diagnostic Test Abbreviations

When a diagnostic test is run on the EC/IR II, the ticket will indicate the components tested by abbreviated these components on the test record as follows:

Baseline Tests

IR=Infrared system

FLO=Flow Sensor

FC=Fuel Cell

Temperature Tests

BA=Board Ambient

BR=Barometer

DT=IR Detector

SC=IR Source

BT=Breath Tube

F1=Fuel Cell (1, there is no FC2)

S2=Standard 2 (Wet sim line)

Blank Test

AIR=Air blank

Printer Status

PRNT=default printer, on, on line, no errors

CRC Tests (Cyclic Redundancy Check)

COMP=Complete CRC

CAL=Calibration CRC

Printer diagnostics should be the full alphabet, lower and upper case, and numerals 0-9.

Intox EC/IR-II: Diagnostic Test

Installation Certificate Number: 000

State of Arkansas
AR DEPT OF HEALTH
OAT

Serial Number: 010690 Test Number: 141
Test Date: 07/01/2009 Test Time: 13:40 CDT
Operator's Name: Supervisor, Sally S
Operator's Certification No.: 123-123456789012345678
Place of Employment: ADH
System Check: Passed

Baseline Tests

Test	Status	Time
IR	Pass	13:40
FLO	Pass	13:40
FC	Pass	13:40

Temperature Tests

Test	Status	Time
BA	Pass	13:41
BR	Pass	13:41
DT	Pass	13:41
SC	Pass	13:41
BT	Pass	13:41
F1	Pass	13:41
S2	Pass	13:41

Blank Tests

Test	Status	Time
AIR	Pass	13:42

Printer Tests

Test	Status	Time
PRNT	Pass	13:42

CRC Tests

Test	Status	Time
COMP	Pass	13:42
CAL	Pass	13:42

Success

Printer Diagnostics:
abcdefghijklmnop
nopqrstuvwxyz
ABCDEFGHIJKLM
NOPQRSTUVWXYZ
0123456789

Purge Sample Chamber

If the instrument is possibly exposed to something in the ambient (surrounding) air it may be necessary to purge the sample chamber.

To purge, simply press "F" on the keyboard. The display will ask "Purge Sample Chamber (Y/N)." Answer Y for yes and the instrument will begin purging. Press the "ESC" button to end the cycle. The instrument will display "Press ESC to Exit." Press "ESC" again to exit.

Other Functions

The EC/IR II will allow you to print a menu of commands available. To do this, simply press the F-1 key, swipe your card, and enter your PIN number. The available menu for the operator's level of certification will be printed. For Senior Operators, the list will include:

- | | | |
|-----|-----------------|------------------------|
| 1) | F1 | Print Command List |
| 2) | F3 | Supervisor Test |
| 3) | F5 | Print Test |
| 4) | F8 | Date and Time Set Up |
| 5) | F11 | Proficiency Test |
| 6) | Shft F2 | Print Software Version |
| 7) | Shft F3 | Test Menu |
| 8) | Ctrl F1 | View Software Version |
| 9) | Ctrl F2 | View Firmware Version |
| 10) | Ctrl F5 | Browse and Print Test |
| 11) | Ctrl F11 | Diagnostic Test |
| 12) | Ctrl F12 | Subject Test |
| 13) | Alt P | View Tank Pressure |
| 14) | "D" | Display Last Test |
| 15) | "F" | Purge Sample Chamber |
| 16) | "P" | Print Last Test |
| 17) | ENTER | Run Subject Test |

F1 - Print Command List

Prints a list of those menu items/functions available for that operator's level of certification. May be printed at anytime.

F3 - Supervisor Test

Allows for the conducting of the supervisor test as described earlier.

F5 - Print Test

Allows a Senior Operator to “go back” in time and print a copy of a previous test. The Senior Operator must have the test number from the earlier test in order to perform this function. In the event of a printer malfunction, this will allow the instrument to be used and test records printed later. To obtain the test record, press “F5” then swipe the card and enter the PIN. Press return. Enter the test number of the test to be printed, then press “ENTER”. The test record will then be produced.

F8 -Date/Time Set-up

The instrument is to be connected to an uninterrupted power source at all times and has a battery back-up system. The date and time are updated periodically by the Office of Alcohol Testing during polling. However, should it become necessary, a Senior Operator may use this function to manually re-set the date and time on the instrument. Press F8 and swipe the operator card and enter the PIN.

Date/Time Setup: will appear showing “Current Date.” Press the “Down” arrow and the date will be displayed. Press the “Down” arrow again and the date will be highlighted, allowing for the date to be changed if necessary. Enter the correct date, using **MM/DD/YYYY**, and press enter.

To advance, press the “Right” arrow and “Current Time” will be displayed. Press the “Down” arrow and the time will be highlighted. Using military time, enter the correct time and press “Enter”. Next, hit the “ESC” key three times to exit setup.

F11 – Proficiency Test

Press F11 to initiate the monthly proficiency test as described earlier.

Shift – F2 – Print Software Version

This information may be needed by the Office of Alcohol Testing or Intoximeters.

Shift- F3 – Test Menu**Ctrl F1 – View Software Version**

Information may be needed by Alcohol Testing or Intoximeters.

Ctrl F2 – View Firmware Version

Information may be needed by the Office of Alcohol Testing or Intoximeters.

Ctrl F5 – Browse and Print Test

Allows the Senior Operator to browse through tests run and to print test records of those tests. After pressing Ctrl and F5, find the test you wish to produce using the scrolling (arrow keys) keys. After finding the particular test, press “ENTER” and the test record will be produced.

Ctrl F11 – Diagnostic Test

Must be run monthly, not to exceed 31 days, to insure all elements are functioning properly.

CTRL F12 – Subject Test

Allows you to begin a subject test sequence. Pressing ENTER will do the same thing.

Alt P – View Tank Pressure

Allows you to view the remaining dry gas standard tank pressure. The remaining pressure will also be displayed on all test records.

“D” – Display Last Test

Will display the last test results on the display screen.

“F” – Purge Cycle

Allows Senior Operators to purge the sample chamber as described earlier. Press “ESC” to exit.

“P” – Print Last Test

Allows Operators and Senior Operators to make a copy of the last test run on the instrument. After pressing “P,” the instrument will prompt the operator to press the space bar and the test record will print. Only one copy at a time will be produced using this method.

STATUS MESSAGES DISPLAYED BY THE INTOXIMETER EC/IR II

MESSAGES DISPLAYED ON A DIAGNOSTIC TEST

Only a Senior Operator level card will allow access to perform an independent diagnostic test. As listed previously, diagnostic tests are run with all tests. On subject, proficiency, and supervisor tests, this will be indicated on the ticket as "DIAG." If any item on the test is not within operating limits, the word "Fail" will appear beside "DIAG" and the test will be aborted. After performing a second test, if the "Fail" is repeated, contact the Office of Alcohol Testing Laboratory.

When an independent diagnostic test is performed, each component and test will be listed separately, followed by "PASS" or "FAIL." If any item indicates a "FAIL," conduct another diagnostic test. If repeated, contact the Alcohol Testing Laboratory.

MESSAGES DISPLAYED ON SUBJECT, PROFICIENCY, OR SUPERVISOR TESTS

The Intoximeter EC/IR II will invalidate a printed record of the test when all conditions are not completely acceptable. The instrument does this by aborting the test in progress, displaying a message on the LCD display, and printing the message on the test record. The instrument is following proper operating procedure when it does this. There are specific status messages that can be displayed on a subject test, proficiency test, or supervisor test.

Anytime the test is aborted, any alcohol results shown on the ticket may not be used and the subject must be re-tested.

INSUFFICIENT SAMPLE

When obtaining a subject sample, the EC/IR II displays two bar graphs on the display. The bottom indicates the volume of the sample and the top indicates the flow/pressure. If there is a drop in pressure before the sample volume is satisfied, if the subjects blowing before the sample is obtained, or not enough pressure is provided, the instrument will stop the sample attempt and display "Insufficient Sample." The instrument will then purge and return to "Please Blow" for another attempt. If an "Insufficient Sample" is obtained three times in succession, the instrument will display "Test Aborted Insufficient Sample" and print the test record which should be entered in the logbook. Each sample attempt will be shown on the test record indicating the duration and volume of each attempt.

The subject can then be retested or another type of test (i.e., blood) can be requested.

DISPLAY	CAUSE	ACTION REQUIRED
Result Not Within. 020 – Retest	Sample results outside of .020, and the results are invalid.	Retest the individual.
High Blank Check Ambient	Instrument reading greater than .005 on the blank check or detecting unsatisfactory ambient conditions.	Check for causes such as used mouthpiece on breath tube, cleaning solutions present, strong odor of intoxicants on subject, paint fumes, etc. and remove if possible then retest.
I.R. Source Fail	Check ambient conditions	Retest, if repeated contact Alcohol Testing Lab.
Invalid Sample	Mouth alcohol detected	Wait 20 minutes then retest.
Result over Range	The subject has registered in excess of .440	Seek medical treatment.
Breath Timeout	Time limit has been exceeded. (3 minutes)	Retest
Check ambient Conditions	Breath sample provided too early or unacceptable ambient conditions	Attempt retest, following prompts.
Standard out of Range	The external standard check has measured outside of the +.003 through - .007 range of the target value.	Contact Alcohol Testing Lab if repeated.
Insufficient Sample	A low signal from the IR CO2 sensor was detected during a breath sample indicating low volume and or pressure. Out of three attempts to provide, all three may have met minimum FLOW but failed to meet minimum VOLUME.	Retest
RFI	Radio Frequency Interference was detected	Retest and contact OAT lab
Diagnostic Test Failed	Failure condition detected during system diagnostic test	Retest, if received second time contact OAT lab
Dry Gas Tank Expired	Dry Gas Standard has reached expiration date	Contact OAT Lab

Breath at Improper Time	Blow/breath detected during any portion of test other than "Please Blow"	Retest
Exceeds Maximum Flow	Too much pressure from suspect sample. Flow pressure has exceeded 60 lpm.	Retest
Deficient Sample	In the 3 minutes allotted to provide a sample, regardless of the number of attempts, no sample was provided which met the minimum volume, AND when prompted to respond to "Refusal? Y/N" the operator selected "N" for NO	Retest or offer an alternative test
Dry Gas Samples Exceeded	The number of allowable tests on the dry gas standard has been exceeded	Contact OAT Lab
Dry Gas Tank Empty	Tank pressure is below 50 psi	Contact OAT Lab
Dry Gas Std Malfunction	An error has occurred with the dry gas standard	Contact OAT Lab
Printer not Ready	Check to make sure printer has power and is on line	
Flow in IR System		Contact OAT Lab
Flow Baseline Error		Contact OAT Lab
I.R. Source	I/R source malfunction	Contact OAT Lab.
Ethanol Baseline Error		Contact OAT Lab
CO2 Baseline Error		Contact OAT Lab
Sample Solenoid Error		Contact OAT Lab
Calibration Error		Contact OAT Lab
Set Solenoid Error		Contact OAT Lab
IR Delta too High		Contact OAT Lab

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