

**NEBRASKA ADMINISTRATIVE CODE**

**TITLE 250, NEBRASKA ADMINISTRATIVE CODE, CHAPTER 1**

**NEBRASKA DEPARTMENT OF MOTOR VEHICLES**

**RULES AND REGULATIONS OF THE DEPARTMENT OF MOTOR VEHICLES REGARDING  
THE APPROVAL AND INSTALLATION OF IGNITION INTERLOCK DEVICES AND  
ADMINISTRATION OF THE IGNITION INTERLOCK PERMIT PROGRAM.**

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Nebraska Department of Motor Vehicles

250 NAC 1

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APPROVED  
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JUN 19 2012

BY   
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**RULES AND REGULATIONS OF THE DEPARTMENT OF MOTOR VEHICLES REGARDING THE APPROVAL AND INSTALLATION OF IGNITION INTERLOCK DEVICES AND ADMINISTRATION OF THE IGNITION INTERLOCK PERMIT PROGRAM.**

**001 PURPOSE.** The purpose of these rules and regulations is to promulgate performance standards for the approval and the installation of ignition interlock devices (also known as Breath Alcohol Ignition Interlock Device or BAIID) and administration of the ignition interlock permit program. Upon approval of these regulations as provided by the Administrative Procedure Act, this new version of 250 NAC 1 rule shall be effective and shall replace the version of 250 NAC 1 approved by Gov. Ben Nelson on February 18, 1994, which shall be repealed in its entirety.

**002 INTERPRETATION.** These rules shall be interpreted so as to favor the safety of the public and the findings of the legislature that ignition interlock devices are designed to supplement other conditions of probation, reprieve, or punishment of those convicted of driving while intoxicated or driving under the influence. References to statutory standards, regulations, or governmental agencies shall be read as referring to and including any amendments. In the absence of a rule specifically addressing a particular matter, there shall be applied reasonable, just and equitable procedures and substantive decisions which are predictable from the spirit and intent of the legislative enactment and these rules.

**003 DEFINITIONS.**

**003.01 Alcohol** shall mean ethanol or ethyl alcohol (C<sub>2</sub>H<sub>5</sub>OH).

**003.02 Alcohol set point** shall mean the breath alcohol concentration at which the ignition interlock device is set to lock the ignition that is set at the time of calibration.

**003.03 Authorization** means that the Department of Motor Vehicles has approved issuance of an Ignition Interlock Permit (IIP) to a driver who, after he or she has submitted an order for an IIP from a court or the Board of Pardons or submitted an application for an IIP while subject to an administrative license revocation, has met all requirements, and is not ineligible for an IIP for any reason. After authorization, the IIP applicant shall apply for the IIP.

**003.04 BAC fail** shall mean the condition in which the ignition interlock device registers a BrAC value in excess of the alcohol set point limit when the driver conducts an initial test(s) or retest(s) in a motor vehicle equipped with an ignition interlock device.

**003.05 BrAC** shall mean the breath alcohol concentration in a given amount of breath, expressed a weight by volume (w/v) based upon grams of alcohol per 210 liters of breath (2100: 1 ratio).

**003.06** Board shall mean the Nebraska Board of Pardons that may order a driver to obtain a permit to operate a motor vehicle equipped with an ignition interlock device pursuant to Neb. Rev. Stat. § 60-6,209.

**003.07** Breath sample shall mean a normal expired human breath primarily containing alveolar or end-expiratory breath that is analyzed for alcohol content (BrAC) after the expiration.

**003.08** Calibration interval shall mean the maximum time period that an ignition interlock device may be used without a calibration check, after which the motor vehicle ignition must lock. The ignition interlock device shall signal a need to have a calibration performed at 30 days. If the calibration has not been accomplished prior to the 36th day, on the 36th day the ignition interlock device shall prevent the motor vehicle from being started or prevent restart after being turned off.

**003.09** Circumvention shall mean an attempt to bypass the correct operation of an ignition interlock device whether by the use of an altered breath sample, by starting the motor vehicle without using the ignition switch, or by any other means without first providing a breath sample.

**003.10** Court shall mean the judge who sentences a driver convicted of operating or being in the actual physical control of any motor vehicle while intoxicated or driving under the influence, or who refuses a chemical test, and as a condition of probation or sentence, imposes the use of an ignition interlock device. This definition shall also mean any district probation offices or court administrative officers assigned to the case of a driver limited to operation of a motor vehicle equipped with an ignition interlock device.

**003.11** Department shall mean the Nebraska Department of Motor Vehicles.

**003.12** Director shall mean the Director of the Nebraska Department of Motor Vehicles or his or her designee.

**003.13** Driver shall mean a person who has been convicted under Neb. Rev. Stat. § 60-6,196 or 60-6,197 and has been ordered by the court or by the Board of Pardons that he or she not operate a motor vehicle during the time period stated in the order unless his or her motor vehicle is equipped with a functioning and approved ignition interlock device and the person has obtained the required license or permit. Driver shall also mean any person who applies to the Department for issuance of an Ignition Interlock Permit for use during a period of administrative license revocation.

**003.14** Eligible shall mean that a driver's driver license is not subject to any other suspension, cancellation, impoundment, no-driving period, or period of revocation, and the person has successfully completed the ignition interlock permit application process, served any applicable no-drive period and:

**003.14A** Is subject to an administrative license revocation pursuant to Neb. Rev. Stat. §§ 60-498.01 through 60-498.04 and has waived his or her right to an administrative license revocation hearing;

**003.14B** Is subject to a court order for an Ignition Interlock Permit as part of a sentence pursuant to Neb. Rev. Stat. §§ 60-6,196, 60-6,197.01, 60-6,197.03, 60-6,197.06, 28-306(3)(b) or (c), 28-394(3)(b) or (c), or subject to an administrative license revocation pursuant to Neb. Rev. Stat. §§ 60-498.01 through 60-498.04; or

**003.14C** Has an order from the Board for an Ignition Interlock Permit.

**003.15** Fail-safe shall mean a condition in which the ignition interlock device cannot operate properly due to some problem (e.g., improper voltage, temperature exceeding operating range, dead sensor, etc.). In a fail-safe condition, the ignition interlock device will not permit the motor vehicle to be started.

**003.16** Ignition interlock device, or breath alcohol ignition interlock device, or BAIID shall mean a device that is designed to allow a driver to start a motor vehicle if the driver's BrAC is below the set point and to prevent the driver from starting the motor vehicle if the driver's BrAC is at or above the set point. An approved device shall have an alcohol specific fuel cell breath alcohol analyzer as a major component that interconnects with the ignition and other control systems of a motor vehicle. The purpose of the ignition interlock device is to measure the BrAC of the driver, to prevent the motor vehicle from being started if the BrAC exceeds a pre-set limit, to deter and to record attempts to circumvent or tamper with the device.

**003.17** Ignition Interlock Fund means the fund created by statute to be used by the Department of Motor Vehicles to pay for the cost of installation, removal, or maintenance of the ignition interlock device for any person the Department has determined to be indigent and incapable of paying as provided in Neb. Rev. Stat. §.60-6,211.05(8)(b).

**003.18** Ignition Interlock Permit (IIP) means a permit issued to a driver which allows the driver to operate a motor vehicle which is equipped with an ignition interlock device. The permitted uses of the driver's IIP shall be printed on the back of the IIP. An IIP shall not be used to operate a commercial motor vehicle.

**003.19** Interlock Data Logger shall mean a device within an ignition interlock device that records all pertinent events and times during the period of installation and use of an ignition interlock device.

**003.20** NHTSA shall mean the federal agency known as the National Highway Traffic Safety Administration.

**003.21** Operator's license or driver's license shall mean any license or permit to operate a motor vehicle issued under the laws of this state, including:

- (1) Any replacement or duplicate license or instruction permit;
- (2) The privilege of any person to drive a motor vehicle whether such person holds a valid license;
- (3) Any nonresident's operating privilege which shall mean the privilege conferred upon a nonresident by the laws of this state pertaining to the operation of a motor

vehicle in this state by such person or the use in this state of a motor vehicle owned by such person;

(4) An employment driving permit issued as provided by section 60-4,129 and 60-4,130; and

(5) A medical hardship driving permit issued as provided by sections 60-4, 130.01 and 60-4,130.02.

**003.22** Provider shall mean a manufacturer's designated representative installer or authorized agent in Nebraska.

**003.23** Restart shall mean the allowance of the motor vehicle ignition key switching system for the driver to start the motor vehicle without having to give a breath alcohol analysis. The driver shall be able to initiate a restart within two minutes after the ignition interlock has turned off the motor vehicle so long as the driver has not registered a BAC fail.

**003.24** Rolling or random retest shall mean a required test by an ignition interlock device of a breath sample that must be conducted according to the pre-set conditions of the ignition interlock device on a fixed time period and shall be completed while the motor vehicle is running but stopped in a safe location as provided in 004.02K of these rules and regulations. Failure to execute a valid retest will cause the motor vehicle ignition system to enter a lockout condition after a fixed time period.

**003.25** Service interval shall mean the maximum time period that an ignition interlock device may be used without maintenance or data download, after which the motor vehicle ignition must lock and prevent the motor vehicle from starting until maintenance service has been completed.

**003.26** Tampering shall mean an attempt to physically disable, disconnect, adjust, or otherwise alter the proper operation of an ignition interlock device in any way that allows the motor vehicle to be started without the driver providing his or her own breath sample into the ignition interlock device or allows a driver with a BrAC above the set point to start the engine.

#### **004** **IGNITION INTERLOCK DEVICE PERFORMANCE STANDARDS.**

**004.01** Submission of Breath Alcohol Ignition Interlock Device Specifications for Approval. An ignition interlock device may be approved for use in Nebraska by meeting either 004.01A or 004.01B below.

**004.01A** Any breath alcohol ignition interlock device specifications submitted to the Department for approval as an approved ignition interlock device for use in this state may be accompanied by a certificate of an independent testing laboratory indicating that the device meets or exceeds the performance standards of the National Highway Traffic Safety Administration for such devices as published in Model Specifications for Breath Alcohol Ignition Interlock Devices, (BAIID), Federal Register, Volume 75, No. 193, Page 61820 et seq. on October 6, 2010, as amended, and which are incorporated with these rules and regulations as

Attachment 1. A complete and certified copy of the testing protocol and the results thereof of the independent testing laboratory shall also accompany the breath alcohol ignition interlock device specifications submitted for approval. The submission should specify that the device meets or exceeds the standards references in this section. In lieu of such documentation, to be approved the submission may show that the submitted model is a fuel cell specific technology equipped model that appears on NHTSA's Conforming Products List. If the device has been given any exemptions from specific provisions of the above regulations by NHTSA, documentation of the exemption shall accompany the submitted material; or

**004.01B** At minimum, any breath alcohol ignition interlock device specifications submitted to the Department for approval as an approved ignition interlock device for use in this state shall be accompanied by a certificate of an independent testing laboratory indicating that the device meets or exceeds the performance standards of the National Highway Traffic Safety Administration for such devices as published in Model Specifications for Breath Alcohol Ignition Interlock Devices, (BAIID), Federal Register, Volume 57, No. 67, Page 11772 et seq. on April 7, 1992, as amended, and which are incorporated with these rules and regulations as Attachment II. A complete and certified copy of the testing protocol and the results thereof of the independent testing laboratory shall also accompany the breath alcohol ignition interlock device specifications submitted for approval. If the device has been given any exemptions from specific provisions of the above regulations by NHTSA, documentation of the exemption shall accompany the submitted material.

**004.01C** In addition to the meeting standards set in either 004.01A or 004.01B of these rules and regulations to be approved for use in Nebraska, the submitted ignition interlock device must use fuel cell specific technology.

**004.01D** A model submitted for approval for use in this state may have a detachable sensor to allow mail-in service to user customers.

**004.01E** In addition to meeting 004.01A or 004.01B of these rules and regulations, an ignition interlock device submitted for approval in this state shall have a camera. Manufacturers of ignition interlock devices approved for use in this state prior to the effective date of this rule shall have until January 1, 2014, to comply with 004.01E of these rules and regulations. Manufacturers of ignition interlock devices seeking approval for an ignition interlock device on and after January 1, 2014, shall comply with 004.01E. Ignition interlock devices without a digital camera function in compliance with 004.01E shall not be installed in Nebraska on or after January 1, 2014, except manufacturers may apply to the Director in writing for an extension beyond January 1, 2014. The written application for the extension should provide an explanation of the need for the extension and provide the date the manufacturer will begin installation of ignition interlock devices equipped with a camera. Such request for an extension must be received or postmark on or before January 1, 2014. Camera requirements shall include:

**004.01E1** At installation the provider must take a reference image of the driver with the camera. The reference image shall be retained by the provider for identification of the person receiving the equipment.

**004.01E2** The ignition interlock device camera shall have sufficient storage for all digital images taken until the date of the next calibration at which point images may be downloaded and stored by the provider as required in 004.01E4 and 004.01E5.

**004.01E3** At minimum an image shall be taken when there is a BAC test fail, a failure to take a BAC test when required, a rolling/random retest failure, and a failure to complete a rolling/random retest. The digital images taken shall capture a wide-angle view of the area around the steering wheel and front cabin and the camera shall be able to recognize it is taking pictures of a person.

**004.01E4** Images required by this rule shall be retained by the provider in electronic format sufficient to allow the provider to find, select, and provide images of events recorded by a specific device installed for a driver upon request by the DMV, a court, a probation office or the Board of Pardons. Applicable images shall be provided to the DMV, a court, a probation office, or the Board of Pardons with any report filed pursuant to 006 of these regulations.

**004.01E5** Images recorded pursuant to this section may be disposed of one year after the ignition interlock has been removed from the motor vehicle.

**004.02** Standards for Approval by the Department. In order to obtain approval of the Department as an approved ignition interlock device, the manufacturer shall comply with subrule 004.01 of these rules and regulations and show that the device fulfills the following requirements:

**004.02A** The ignition interlock device shall offer safe operation of the motor vehicle in which the device is installed;

**004.02B** The ignition interlock device shall offer protection against tampering and preservation of evidence of such tampering;

**004.02C** The ignition interlock device shall be able to detect and be resistant to circumvention;

**004.02D** The ignition interlock device shall work reliably and accurately in an unsupervised environment and in a fail-safe condition cause the motor vehicle not to start;

**004.02E** The ignition interlock device shall be able to initiate a "restart" of the motor vehicle's ignition within two minutes after the ignition has been turned off without requiring another breath alcohol analysis so long as the driver has not registered a BAC fail;

**004.02F** The ignition interlock device shall use an alcohol specific fuel cell technology and shall be designed and constructed to measure a driver's breath alcohol concentration from a deep lung breath sample blown directly into the device;

**004.02G** The ignition interlock device shall be designed and constructed so that the ignition system of the motor vehicle in which it is installed is disabled if the alcohol concentration of the driver using the device exceeds the alcohol set point permitted by subrule 004.02H of these rules and regulations;

**004.02H** The ignition interlock device test shall cause a driver's motor vehicle to fail to start (BAC fail) when the driver's breath alcohol concentration (BrAC) is at or greater than .03 grams of alcohol per 210 liters of breath;

**004.02I** The ignition interlock device shall cause the ignition system of the motor vehicle to be disabled if the ignition interlock device has not been calibrated and serviced within the period provided in 003.08 of these rules and regulations, subsequent to its installation, or last calibration interval, or inspection, whichever is sooner;

**004.02J** The ignition interlock device shall be able to record each time the motor vehicle is started, the time of each start, how long the motor vehicle was operated, and any instances of tampering or attempted tampering with the unit;

**004.02K** **Rolling or Random Retest.** The ignition interlock devices shall be capable of random rolling retests as provided below:

**004.02K1** The ignition interlock device shall allow for a random rolling retest of a subsequent breath test within the first five minutes of starting operation of the motor vehicle. After the initial rolling retest within five minutes of starting operation of the motor vehicle, the ignition interlock device shall require the driver to perform another randomly timed rolling retest during each following 30-minute interval of operation until the motor vehicle is turned off.

**004.02K2** During the rolling retest, the retest set point shall be .036 grams alcohol per 210 liters of breath to preclude a false positive test result. In order to alert the driver that a rolling retest is required, warning light and/or tone shall come on. After the warning is activated, the driver shall have five minutes to safely pull over. The driver shall have an additional two minutes to provide a breath sample for the retest. If the engine is intentionally or accidentally shut down after the warning but before retest sample is provided the retest clock shall not be reset. The free restart shall not be operative when the ignition interlock device is awaiting a rolling retest sample.

**004.02K3** The ignition interlock device shall be installed in such a way that the ignition system of the motor vehicle will be prevented from restarting after the motor vehicle is turned off if the driver fails to meet the requirements with regard to an alcohol concentration as prescribed in subrule 004.02H or subrule

004.02K of these rules and regulations. Failure of the test shall mean the driver is above the prescribed allowable breath alcohol concentration (BrAC). A BAC fail of a retest or failure to provide a sample for retest shall be recorded as an event on the data logger. The driver will be warned by a unique auditory or visual cue that the motor vehicle ignition will enter a lockout condition within a period of five days, and the lockout will occur in five days as provided in 004.02P of these rules and regulations. If the driver starting a motor vehicle has BAC fail, the device shall allow a second breath test within two minutes. If there is a second BAC fail, the device shall allow retest subsequent to the initial test at intervals no shorter than 15 minutes.

**004.02L** The ignition interlock device shall visibly indicate the following to the driver and any qualified person:

**004.02L1** the device is on;

**004.02L2** the device has enabled the ignition system of the motor vehicle in which it is installed;

**004.02L3** the device is in need of service or calibration;

**004.02L4** the failure (BAC fail) of the BrAC threshold and the reading obtained by the device on the breath sample introduced; and

**004.02L5** The ignition interlock device may augment visible signals or indicators provided to the driver with audible ones.

**004.02M** Any ignition interlock device installed in Nebraska on or after January 1, 2013, shall be capable of recording the events listed in 004.02O below on the data logger. These recorded events shall also be downloadable. The provider has a duty to report events to the Department, district probation offices, courts, or the Board as required by section 006 of these rules. Reports may be delivered by electronic means to the Department, district probation offices, courts, or the Board in a format prescribed by the agency.

**004.02O** The ignition interlock device shall cause a warning message to be displayed to the driver whenever the following events are recorded:

**004.02O1** A BAC test fail;

**004.02O2** A failure to take a BAC test when required;

**004.02O3** A rolling retest failure;

**004.02O4** A failure to complete a rolling retest;

**004.02O5** A circumvention attempt;

**004.02O6** A tampering attempt; or

**004.02O7** At least five days before the end of the calibration interval when service of the ignition interlock device must be performed as provided in 003.08 of these rules and regulations.

**004.02P** The driver shall be required to report to a manufacturer or manufacturer's designated representative for service within five days of a recall message/lockout warning to prevent a lockout by the ignition interlock device. A recall message/lockout warning message shall be displayed to the driver upon the occurrence of any combination of three of the following events during a calibration period:

**004.02P1** A BAC test fail;

**004.02P2** A failure to take a BAC test when required;

**004.02P3** A rolling retest failure;

**004.02P4** A failure to complete a rolling retest.

**004.02Q** Lockout shall be required after one circumvention attempt or one tampering attempt.

**004.02R** **Driver's Reporting Requirements.** A driver required to have an IIP and ignition interlock device must contact the device's manufacturer or report to a manufacturer's designated representative to have the interlock data logger downloaded within five days of an occurrence listed in 004.02P or 004.02Q above. Failure of the driver to arrange and complete such download or service within five days shall cause the motor vehicle to enter a lockout condition.

**004.03** **Warning Label.** The manufacturer and/or representative shall also supply for each ignition interlock device installed as a result of a court or Board order, a warning label which shall not be less than one-half inch in height by three inches in length and carry the following language: "WARNING! ANY ACTUAL OR ATTEMPTED TAMPERING OR CIRCUMVENTION OF THIS DEVICE IS A CRIME. NEB. REV. STAT. 60-6,211.11".

**004.04** **Issuance of Approval by the Department and Removal of Approval.**

**004.04A** Upon the demonstration by the manufacturer of a breath alcohol ignition interlock device that said device meets the criteria outlined in subrules 004.01 and 004.02 of these rules and regulations, the Department may issue a certificate of approval for use of the ignition interlock device in Nebraska.

**004.04B** The Department shall maintain a list of approved ignition interlock devices and their manufacturers. The Department has the sole discretion to approve ignition interlock devices for use in this state or remove such devices from

the approved list for failure to comply with these regulations or other good cause shown. If an ignition interlock device is removed from NHTSA's Conforming Product's List, that shall also be grounds for the Department to remove ignition interlock devices from the list of approved interlock devices in this state.

**004.04C** A randomly ordered list of manufacturers with approved ignition interlock devices for use in Nebraska will be posted on the Department's webpage. It shall be the responsibility of the manufacturers to notify the Department with updated contact information for the webpage.

**004.05 Independent Checks on Ignition Interlock Devices.** The Department may conduct, or have conducted, independent checks on any of the approved ignition interlock devices to determine if the devices are operating within these rules and regulations. If the independent check indicates that the rules and regulations are not being followed, the Department shall require the manufacturer or his or her designated representative installer to correct any abnormality found in the installation, calibration, maintenance checks, or usage records of the device. The manufacturer or his or her designated representative installer shall report in writing to the Department within 30 days after receiving notification of the abnormality. The Department has the authority to remove from the list of approved ignition interlock devices, any device not found to be in compliance with these rules and regulations.

**004.06 Cooperation with State and Subdivisions of Government.** Every manufacturer of approved ignition interlock devices and such manufacturers' designated representative installers shall cooperate with and report to the Department, the courts, district probation offices, and the Board in this state in the manner as may be required by such agencies. Whenever it comes to the attention of the Director that a manufacturer or the manufacturer's designated representative installer has failed to cooperate with authorities or to comply with any rule or requirement of the Department, the courts, district probation offices, or Board, such failure will be grounds for removing the manufacturer's equipment from the list of approved ignition interlock devices. Receipt of timely information by the Department that the issue has been resolved may avoid removal of the manufacturer's equipment from the approved list.

**004.07 Required Locations of Ignition Interlock Device Installation Facilities.** Manufacturers must have at least one designated representative installer physical location in each of the 12 probation districts in Nebraska to achieve statewide service to the public, EXCEPT that if no location in a probation district is more than 30 miles to the physical location of a designated representative installer in an adjacent district, that probation district may be served by a physical location or locations in an adjacent probation district(s). Manufacturers with approved ignition interlock devices on September 1, 2011, shall have until January 1, 2013, to provide a designated representative installer physical locations throughout the state as provided in this section and shall provide that list of locations to the Department by January 15, 2013, to retain approval for service in Nebraska. Any manufacturer applying for original approval on January 1, 2013, or after shall show they have statewide distribution as provided in this section. Mobile service shall not be a substitute for physical locations required by this

section. Information about locations of district probation offices and a map of probation districts is available on the Nebraska Supreme Court webpage at:

<http://www.supremecourt.ne.gov/probation/>

**004.08 Addresses and Contact Information for Installation Facilities.** Upon receipt of approval from the Department of an ignition interlock device for use in Nebraska, a manufacturer shall provide a list of addresses of the manufacturer's designated representative installers and contact information for use on the ignition interlock device to the Department, the courts, the district probation offices, and the Board. A list of addresses of the manufacturer's designated representative installers, contact information shall be sent to such agencies by January 15 of each year. The addresses and/or contact information may be changed as necessary but notice of any change or changes shall be sent to the Department, the courts, district probation offices, and the Board prior to the effective date of the change or changes.

**004.09 Fee Schedule.** Upon receipt of approval from the Department of an ignition interlock device for use in Nebraska, a manufacturer shall provide a schedule of fees for services to the Department. Such fee information shall be sent to the Department by January 15 of each year or upon any changes. Such fee information provided by approved providers shall be proprietary information.

**004.10 Insurance.** A manufacturer shall have and maintain general business insurance and product liability insurance for the ignition interlock device(s) for which approval is sought. The manufacturer shall require each of his or her designated representatives to have and maintain general liability insurance. A manufacturer may require his or her designated representative to have other insurance.

**004.11 Indemnification.** A manufacturer seeking approval of an ignition interlock device shall agree to indemnify the State of Nebraska, its employees, agents, assignees, and legal representative with respect to any liabilities, demands, claims, suits, losses, damages, causes of action, fines or judgments and expenses related thereto which may in any manner accrue or be asserted against the State, the Department, its employees, agents, assignees and legal representatives that arise in connection with installation and/or use of an ignition interlock device and shall hold the State harmless.

**004.12 Inspection.** Representatives of the Department shall have the right to inspect the premises of any location within the State of Nebraska where manufacturer or manufacturer's designated representative provide and install ignition interlock devices approved for use in this state, to test devices, and to audit drivers' records.

## **005 INSTALLATION STANDARDS FOR IGNITION INTERLOCK DEVICES.**

**005.01** An ignition interlock device, required by an administrative license revocation, probation order, sentence, or Board order, shall be installed as provided below:

**005.01A Installation and Documentation of Installation.** An ignition interlock device installed for use in Nebraska under these rules shall be a device approved

pursuant to this regulation and installed by the manufacturer or by the manufacturer's designated representative installer in conformance with the directions of the manufacturer. A device must be installed at the manufacturer's or his or her designated representative installer's physical location or a manufacturer or manufacturer's designated representative may provide onsite mobile installation service.

**005.01B Required installation Records and Ignition Interlock Disclaimer Form.** Prior to installing an ignition interlock device for any driver, the manufacturer or manufacturer's designated representative shall have the driver complete and sign an **Ignition Interlock Information and Disclaimer** form or equivalent in addition to any documentation required for the provider's business purposes. The driver shall be provided with a copy of the completed and signed Ignition Interlock Information and Disclaimer form. The disclaimer shall contain a statement that the driver having the ignition interlock device installed has contacted the Department to determine when he or she is eligible to have the IIP issued and that he or she is eligible to have the device installed. The manufacturer or manufacturer's representative shall keep the driver's signed original copy on file as provided in 006 of these rules and regulations. A copy of the driver's signed Ignition Interlock Information and Disclaimer form shall be made available to representatives of the Department, the courts, probation offices, the Board, or law enforcement officers upon request. A provider of approved ignition interlock devices in this State shall download the form from the Department's webpage at: [www.dmv.ne.gov](http://www.dmv.ne.gov) to provide to drivers who have ignition interlock devices installed.

**005.01C Instruction.** The manufacturer or manufacturer's representative shall provide instruction to a driver who is having an ignition interlock device installed on his or her motor vehicle. The driver shall be instructed in the operation of the ignition interlock device, safe operation of a motor vehicle while the ignition interlock device is installed, and compliance with required procedures, including but not limited to responding to a signal from the device to report to the manufacturer for service. These procedures shall include a minimum 15-minute waiting period between the last drink of an alcoholic beverage and time of blowing into the ignition interlock device. The driver shall be instructed that he or she must contact the device's manufacturer or report to a manufacturer's designated representative to have the interlock data logger downloaded within five days of receipt of the message for service. The driver shall be instructed that failure to arrange and complete such download or service within five days will result in a lockout condition of the motor vehicle. If there is a failure to report for calibration service, the manufacturer or designated representative must then send the resulting report to the appropriate district probation office, court, or Board, or the Department before the close of business the next business day as provided in 006 of these rules and regulations.

**005.02 Required Calibration.** An ignition interlock device installed and used under these rules shall be calibrated as provided in section 003.08 of these rules and regulations using either a wet alcohol standard or a compressed gas standard (minimum five cubic foot volume) at the site of installation by the dealer or agent who installed the

ignition interlock device or may be calibrated by the manufacturer using a mailing service. The calibration requirements of the ignition interlock device shall be designed so that the motor vehicle will be placed in a lockout condition if the driver fails to have the calibration as required. The calibration record shall be maintained by the designated representative installer or manufacturer and the record shall include:

**005.02A** The name of the person performing the calibration;

**005.02B** The date;

**005.02C** The value and type of standard used;

**005.02D** The unit type and identification number of the ignition interlock device checked; and

**005.02E** The description of the motor vehicle in which the ignition interlock device is installed, including plate number and state, make, model, year, and color.

**005.03 Documentation of Calibration.** The driver shall be provided a copy of current documentation of calibration to keep in his or her motor vehicle as proof of compliance. Calibration shall be consistent with the requirements of 004.02 and 005.02 of this rule. Completed Ignition Interlock Device Calibration forms shall be retained in the installer's records as provided in 006 of these rules and regulations. Calibration records shall be provided upon request for inspection by a law enforcement officer, officer of the court, district probation office representative, Department representative, or representative of the Board. Providers may use a Nebraska Ignition Interlock Device Calibration form which shall be available for downloading on the Department's webpage at [www.dmv.ne.gov](http://www.dmv.ne.gov). Results of ignition interlock device calibrations shall be reported as provided in 006 of these rules and regulations on the Ignition Interlock Incident Report form as may be necessary.

**005.04 Removal of Ignition Interlock Device.**

**005.04A Removal.** An ignition interlock device may be removed upon the expiration date of a driver's IIP or Class O interlock license. Removal shall be reported as provided in 006.04 of these rules and regulations.

**005.04B Removal of Ignition Interlock Device Prior and Legal Requirement for Ignition Interlock Device.** An ignition interlock device may be removed by the manufacturer or his or her designated representative installer upon a driver's request. A driver who has an ignition interlock device removed prior to the expiration date of the IIP or Class O interlock shall be cautioned that he or she cannot legally operate a motor vehicle which is not equipped with an approved ignition interlock device until his or her period of revocation has passed and he or she has been issued a new driver license. An ignition interlock device may also be removed for any reason specified in the contract with the driver for installation and service of the ignition interlock device by the manufacturer and his or her designated representative.

**005.04C** Removal of an ignition interlock device shall be reported to the Department as provided in 006.04 of these regulations.

**005.04D** Transfer of Title. If a motor vehicle equipped with an ignition interlock device is sold or otherwise transferred as provided in Neb. Rev. Stat. § 60-395, the ignition interlock device must be removed from the motor vehicle before transfer of title or payment of any refund of registration fees, motor vehicle fees, or motor vehicle taxes. An owner may be required to present evidence of removal of the ignition interlock device prior to payment of any refund.

**005.04E** Location. An ignition interlock device may be removed at the manufacturer's or his or her designated representative installer's physical location or a manufacturer or his or her designated representative may provide mobile onsite service for removal of the ignition interlock device from a motor vehicle.

**006** MANUFACTURER'S OR INSTALLER'S REPORTING REQUIREMENTS. The manufacturer, or his or her designated representative installer, shall report to the Department, the court, district probation office, or the Board according to the information provided on the driver's signed Ignition Interlock Disclaimer form completed and signed prior to installation of the device on a driver's motor vehicle(s) and kept on record. Any suspected violation shall be reported to the appropriate office using the Ignition Interlock Incident Report form or equivalent. A form may be downloaded from the Department's webpage at www.dmv.ne.gov. The following occurrences shall be reported:

**006.01** Test Failures (BAC Results of 0.03 or Above).

**006.01A** Failures recorded; fail pattern, in our opinion, does not indicate consumption of beer, wine, or spirits.

**006.01B** Failures recorded; fail pattern, in our opinion, indicates consumption of beer, wine, or spirits.

**006.02** Tampering or Circumvention.

**006.02A** Suspected attempts to tamper with or circumvent the ignition interlock device were observed or recorded.

**006.02B** Suspected disconnection(s) of the ignition interlock device from the motor vehicle's electrical system were recorded (power disconnects) and if the driver credibly indicated that mechanical service was performed on the motor vehicle or did not provide a credible reason why the power supply to the ignition interlock device was interrupted.

**006.03** Violation Reset (Failed or "Not Taken") Random (While Driving) Retest as Shown by Data Logger.

**006.03A** Failures recorded; fail pattern, indicates consumption of beer, wine, or spirits.

**006.03B** Test not taken or other failure to respond to or comply with visual or audible signals from the ignition interlock device.

**006.04 Removal.** Removal of the ignition interlock device prior to the expiration of the IIP and driver's period of revocation.

**006.05** The manner of reporting shall be as required by the Department, court, a probation office, or the Board and may be done by electronic means in a format prescribed by the agency.

**006.05A** District probation office's telephone numbers and e-mail addresses will be available at <http://www.supremecourt.ne.gov/probation/>.

**006.05B** Telephone numbers and e-mail addresses for the Department shall be found on the Department's webpage at [www.dmv.ne.gov](http://www.dmv.ne.gov). A downloadable copy of the Nebraska Ignition Interlock Incident Report form shall be available on the Department webpage at [www.dmv.ne.gov](http://www.dmv.ne.gov) for reporting to the Department and may be mailed, e-mailed or faxed to the Department.

**006.06 Requirements to Provide Reports upon Request.** The manufacturer, or his or her designated representative installer, shall provide copies of all records for any driver/client to law enforcement officers or representatives of the Department, a court, district probation office, or the Board, upon request. This shall include, but is not limited to, records of installation, calibration, maintenance checks, usage records, disclaimer forms, images, and incident reports of any driver or drivers or any or all of their ignition interlock devices placed in service in Nebraska. A manufacturer or his or her designated representative shall retain all of a driver's ignition interlock records for at least one year after the ignition interlock device has been removed from the driver's motor vehicle or motor vehicles.

## **007 ISSUANCE OF THE IGNITION INTERLOCK PERMIT (IIP).**

**007.01 Ignition Interlock Permit (IIP) Issuance and Renewal.** Any driver subject to an order of administrative license revocation from the Department or who has an order for an IIP and ignition interlock device from a court or the Board may apply for an IIP.

**007.01A Application.** The Department will provide an application form for issuance of an IIP which shall be available online on the Department webpage at [www.dmv.ne.gov](http://www.dmv.ne.gov) and also available upon request. The application shall contain a statement from the applicant for an IIP that he or she acknowledges that he or she understands that he or she will have his or her license administratively revoked pursuant to Neb. Rev. Stat. §§ 60-498.01 and 60-493.02, that he or she waives his or her right to a hearing to contest the revocation, and that he or she understands that he or she is required to have an ignition interlock permit to legally operate a

motor vehicle for the period of the revocation and may be subject to no-driving periods as specified in statute before the IIP may be issued.

**007.01B Authorization for IIP.**

**007.01B1 IIP Order from Court or Board of Pardons.** On or after January 1, 2012, any driver arrested on or after that date who wishes to have an IIP must obtain authorization from the Department to be issued an IIP. Prior to authorization, the Department must have received an application for an IIP, sufficient evidence of installation of the ignition interlock device, a certified abstract of a court order for an IIP, or an order from the Board allowing the driver to operate a motor vehicle with an ignition interlock device before authorizing the issuance of the IIP. The driver must serve any required no-drive period and be determined to be eligible prior to authorization for an IIP. The Department must have evidence that the driver has surrendered his or her driver license to the Department. Drivers arrested before or on December 31, 2011, shall be subject to the law in place on the date of arrest.

**007.01B2 Administrative License Revocation.** To obtain an IIP for use during a period of administrative license revocation, an arrested driver shall complete the IIP application process, and the Department shall allow the driver to be issued an IIP for use during a period of administrative license revocation if the driver is determined to be eligible and the driver has served any required no-drive period. The Department must have evidence that the driver has surrendered his or her driver license to the Department. Drivers arrested before or on December 31, 2011, shall be subject to the law in place on the date of arrest.

**007.01B3** After authorization, an IIP may be obtained at a Department licensing station in Nebraska or through an online issuance process when such service becomes available.

**007.01C Determination of IIP Eligibility.** Prior to issuance of an IIP, the Department shall review its records of any driver who applies for an IIP allowing operation of a motor vehicle equipped with an ignition interlock device to determine (a) the applicant's eligibility for an IIP; (b) the applicant's previous convictions under Neb. Rev. Stat. § 60-6,196, 60-6,197, or 60-6,197.06 or any previous administrative license revocation within any preceding 15 years, if any; (c) if the applicant is subject to any required no-drive periods before the IIP may be issued; and (d) the permitted driving uses to be allowed to that driver on his or her IIP. The Department will determine the eligibility of the driver, and apply any credit the driver may have for revocation dates served or no-driving days served before issuing the IIP to the driver. A driver shall contact the Department to determine their eligibility for an ignition interlock device prior to having a device installed.

**007.02 Applicable No-Driving Periods and Limitations on Driving Privileges.**

**007.02A Required No-Drive Periods Prior to IIP Issuance.**

**007.02A1 No Priors.** Any driver who is subject to an administrative license revocation and who has no such prior revocations within the preceding 15-year period who has not petitioned for an administrative hearing may immediately apply for an IIP to use for operation of a motor vehicle during the 180-day period of revocation so long as he or she is otherwise eligible for such permit.

**007.02A2 Prior Revocations.** Any driver who is subject to an administrative license revocation and has one or more prior such revocations within the preceding 15 years, who submitted to a chemical test pursuant to Neb. Rev. Stat. § 60-6,197, and who has not petitioned for an administrative hearing may apply for an IIP to use during the one-year period of revocation after serving a 45-day period with no driving so long as he or she is otherwise eligible for such permit.

**007.02A3 Refusal.** Any driver subject to an administrative license revocation for refusal of a chemical test, and who has not petitioned for an administrative hearing may apply for an IIP to use during the one year after serving a 90-day period with no driving so long as he or she is otherwise eligible.

**007.02A4 Reprieve from Board of Pardons.** Any driver subject to an order from the Board requiring use of an ignition interlock device for operation of a motor vehicle must use the device and comply with the requirement of the IIP for the time period designated by the Board in its order, subject to any conditions which may be ordered by the Board as soon as the driver completes the application process.

**007.02A5 Alcohol-Related Offenses.** A court may only issue an order for an IIP to a driver subject to a driver license revocation and sentenced pursuant to Neb. Rev. Stat. § 28-306(3)(b) or (c), 28-394(3)(b) or (c), 60-6,196, 60-6,197, 60-6,197.06, or 28-1254. The Department will determine the eligibility of the driver, and apply any credit the driver may have for revocation days served or no-driving days served pursuant to Neb. Rev. Stat. §§ 60-498.01 through 60-498.02 before issuing the IIP to the driver. If the driver does not have sufficient credit, he or she will have to serve any remaining no-driving days and period of revocation as may be required by the court and applicable statutes.

**007.03 Driving Privileges.** Ignition interlock driving privileges with an IIP for new or repeat offenders shall be subject to driving restrictions as required by Nebraska statute. Any applicable driving restrictions will be printed on the reverse of the IIP.

**007.04 Legal Operation of a Motor Vehicle Equipped with an Ignition Interlock Device.** A person who is subject to a revocation of his or her driver license may not legally operate a motor vehicle equipped with an ignition interlock device until he or she has been issued an IIP. The IIP may be renewed if the permit expires prior to the end of any revocation period the driver has been ordered to serve. The fees for such license or permit shall be as provided in Neb. Rev. Stat. § 60-4,115 and shall be paid at the time the IIP is issued.

**007.05 Extension of Requirement for IIP.** Whenever it comes to the attention of the Director that a person has tampered with or circumvented an ignition interlock device installed pursuant to Neb. Rev. Stat. §§ 60-498.01 through 60-498.04 or operated a motor vehicle not equipped with a functioning ignition interlock device required pursuant to such sections or otherwise violated allowed purposes for operation indicated on the IIP under such sections shall, in addition to any possible criminal charges, have his or her revocation period and IIP extended for six months beyond the end of the original revocation period.

**007.06 Commercial Motor Vehicles.** An IIP shall not be issued for the operation of a commercial motor vehicle.

**007.07 Applicability of Law.** IIPs shall be available to drivers according to Nebraska statutes in place on the date of the driver's arrest.

**007.08 Reinstatement or Renewal Requirement.** A driver who has completed his or her period of revocation cannot drive legally until he or she completes the reinstatement process with the Department and has been issued a new driver license. A driver subject to a period of revocation may need to renew the IIP if his or her period of driver license revocation exceeds five years.

**008 IGNITION INTERLOCK COSTS.**

**008.01 Driver Responsibilities.** The costs associated with ignition interlock device requirements shall be paid by the driver directly to the provider of the ignition interlock device. Such costs shall include, but are not limited to, refundable deposit, installation, maintenance, and removal of an ignition interlock device. The costs associated with ignition interlock device requirements for an indigent driver are set forth in 009.03 below.

**008.02 Refundable Deposit.**

**008.02A Refundable Deposit Fee.** A provider may charge a driver a deposit fee prior to the installation of an ignition interlock device.

**008.02B Uniform Application of Deposit Fee and Amount.** If a provider requires payment of a deposit prior to installation, such fee must be required of all drivers and shall not be charged selectively. The amount of the deposit fee charged shall be uniform for all drivers and may not exceed the amount of the installation fee charged for an ignition interlock device.

**008.02C Deposit and Refund.**

**008.02C1** The deposit amount may be used by the provider to offset unpaid costs owed to the provider by the driver, including damages to the ignition interlock device. The provider shall give the driver an itemized statement of

any costs that were deducted from the refund amount. The provider shall keep a copy of that itemized statement as provided in 006 of this rule.

**008.02C2** A provider may require payment of a refundable deposit for the installation of an ignition interlock device for a driver who has been determined to be indigent under this rule. The Department of Motor Vehicles Ignition Interlock Fund shall not be used to pay the cost of any deposit. The refundable deposit fee shall be paid for by the indigent driver and shall be refunded to the indigent driver when the device is removed by the provider. A provider who receives reimbursement for installation, maintenance, and removal of an ignition interlock device from the Department of Motor Vehicles Ignition Interlock Fund shall not offset any installation, maintenance, or removal costs from the refund of deposit fee to an indigent driver upon return of the device, but may deduct other unpaid or damages from the refund. The provider shall give the driver an itemized statement of any deductions from the refund amount. The provider shall keep a copy of that itemized statement as provided in 006 of this rule.

**008.03 Indigent Drivers.**

**008.03A Application.** The Department shall post an application for determination of indigency online on the Department's webpage at [www.dmv.ne.gov](http://www.dmv.ne.gov) or make such application available to individuals upon request. A driver claiming indigence shall send a completed, notarized application or provide equivalent information to the Department for review.

**008.03B Approval and Denial.** Upon receipt of an application for determination of indigency, the Department will review the application to determine the applicant driver's indigency status and verify the applicant's eligibility for an IIP. The Department may deny a driver's application if the information is incomplete, or if it does not show the applicant is indigent.

**008.03C Determination of Indigency.** An applicant applying for assistance from the Department of Motor Vehicles Ignition Interlock Fund shall meet 150 percent or less of the federal poverty guidelines published in the Federal Register pursuant to 45 CFR Part 1611.3 setting out Income Level for Individuals Eligible for Assistance to qualify as indigent. The Department may also consider the income, expenses, and assets as reported by the driver in his or her application. Applicants shall provide documentation of current income with a pay stub, most recent W2, most recent tax return, or statement from an employer with the application. The Department will document its decision and provide a copy to the driver.

**008.03D Installation.** An applicant determined to be indigent may apply for installation of an approved ignition interlock device at any location of a manufacturer or manufacturer's representative installer offering approved ignition interlock devices. Contact information for such manufacturers shall be posted on the Department of Motor Vehicles webpage. The driver shall provide the manufacturer or manufacturer's representative installer with documentation showing approval for

assistance by the Department of Motor Vehicles Ignition Interlock Fund as part of the process for installing the ignition interlock device.

**008.04 Provider Reimbursement.**

**008.04A Monthly Statement.** Providers who wish to receive reimbursement for installation, maintenance, or removal of ignition interlock devices for drivers qualified as indigent shall enter into a written contract with the Department. Providers shall present a monthly bill to the Department listing the drivers served and itemizing the services for which reimbursement is claimed during the billing period. Reimbursable costs are limited to fees for installation, maintenance, and removal of an ignition interlock device.

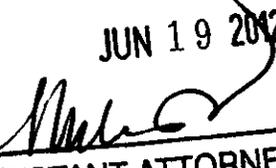
**008.04B Final Bill Due.** When an ignition interlock device is removed from the motor vehicle of a driver qualified as indigent, within 30 days the provider shall send a final itemized statement to the Department which documents the removal of the device for that driver and return of any deposit fee, if applicable.

**008.04C Statement Form.** A reimbursement form shall be available on the Department webpage for use by providers. The reimbursable fees charged by a provider to an indigent driver for use of an ignition interlock device shall not exceed the fees for such services charged to other customers for an ignition interlock device.

**008.04D Payment.** Upon review of the statement for accuracy, such costs shall be paid to the provider on a monthly basis by the Department out of the Department of Motor Vehicles Ignition Interlock Fund, to the extent such funds are available. There shall be no provider reimbursement if there are no monies in the Fund. The Department reserves the right to deny payment for insufficient or incomplete statements, untimely statements, or any claims submitted that are not supported by the records of the Department upon review of the statement.

APPROVED  
JON BRUNING  
ATTORNEY GENERAL

JUN 19 2012

BY   
ASSISTANT ATTORNEY GENERAL

**Attachment 4 to 250 NAC Chapter Model Specification for Breath Alcohol Ignition Interlock Devices (BAID), 75 FR No. 193, Oct. 6, 2010 pages 68820 through 61833**

61820

Federal Register / Vol. 75, No. 193 / Wednesday, October 6, 2010 / Notices

FOR FURTHER INFORMATION CONTACT section by October 19, 2010. Persons may request time to make an oral presentation. Persons may also submit written comments. Written comments and requests to make oral presentations at the meeting should reach Drew Dawson at the address listed below or via the Document Management System and must be received by October 19, 2010.

All submissions received must include the docket number, NHTSA-2010-0136, and may be submitted by any one of the following methods: (1) You may submit or retrieve comments online through the Document Management System (DMS) at <http://www.regulations.gov> under the docket number listed at the beginning of this notice. The DMS is available 24 hours each day, 365 days each year. Electronic submission and retrieval help guidelines are available under the help section of the Web site; (2) you may submit comments by E-mail to [drew.dawson@dot.gov](mailto:drew.dawson@dot.gov) or [noah.smith@dot.gov](mailto:noah.smith@dot.gov); or (3) you may submit comments by Fax to (202) 366-7149.

An electronic copy of this document may be downloaded from the Federal Register's home page at <http://www.archives.gov> and the Government Printing Office's database at <http://www.access.gpo.gov/nara>.

Please note, that even after the comment closing date, we will continue to file relevant information in the docket as it becomes available.

FOR FURTHER INFORMATION CONTACT: Drew Dawson, Director, Office of Emergency Medical Services, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., NHT-140, Washington, DC 20590, Telephone number (202) 366-9986; E-mail [Drew.Dawson@dot.gov](mailto:Drew.Dawson@dot.gov).

SUPPLEMENTARY INFORMATION: Notice of this meeting is given under the Federal Advisory Committee Act (FACA), Public Law 92-463, as amended (5 U.S.C. App. 1 et seq.) The NEMSAC will hold a meeting on Tuesday, October 26, 2010, via teleconference.

Agenda of Council Teleconference Meeting, October 26, 2010

The tentative agenda includes the following:

Tuesday, October 26, 2010

- (1) Opening Remarks—Chair and Designated Federal Officer;
- (2) Introduction of Members and all in attendance;
- (3) Federal Advisory Council Act Overview;

(4) NHTSA Office of EMS Overview;  
(5) Other Federal agency EMS activities;

(6) FICEMS Overview;  
(7) Public Comment Period;  
(8) Next Steps and Future Meetings.

While the entire meeting is open to the public, the public comment period will take place on October 26, 2010, between 4 p.m. and 4:15 p.m.

**Public Attendance:** The meeting is open to the public. Persons with disabilities who require special assistance should advise Drew Dawson of their anticipated special needs as early as possible. Members of the public who wish to make comments on Tuesday, October 26, between 4 p.m. and 4:15 p.m. are requested to register in advance. In order to allow as many people as possible to speak, speakers are requested to limit their remarks to 3 minutes. For those wishing to submit written comments, please follow the procedure noted above.

Individuals wishing to register for attendance in the teleconference must provide their name, affiliation, phone number, and e-mail address to Drew Dawson by e-mail at [drew.dawson@dot.gov](mailto:drew.dawson@dot.gov) or by telephone at (202) 366-9986 no later than October 19, 2010. There will be limited call-in lines, so please register early. Pre-registration is necessary to enable proper arrangements.

Minutes of the NEMSAC Meeting will be available to the public online through the DOT Document Management System (DMS) at: <http://www.regulations.gov> under the docket number listed at the beginning of this notice and on <http://www.ems.gov>

Issued on: October 1, 2010.

Jeffrey P. Michael,  
Associate Administrator for Research and Program Development.

[FR Doc. 2010-25164 Filed 10-5-10; 8:45 am]

BILLING CODE 4910-00-P

## DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

[Docket No. NHTSA-2010-0033]

Model Specifications for Breath Alcohol Ignition Interlock Devices (BAIDs)

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice.

SUMMARY: This notice proposes revisions to the Model Specifications for Breath Alcohol Ignition Interlock

Devices (BAIDs). The Model Specifications are guidelines for the performance and testing of BAIDs. These devices are designed to prevent a driver from starting a motor vehicle when the driver's breath alcohol concentration (BrAC) is at or above a set alcohol level. Most States currently use BAIDs as a sanction for drivers convicted of driving while intoxicated offenses. In 1992, this technology was new. Now that it has matured, NHTSA proposes to revise the 1992 Model Specifications, to test BAIDs for conformance and to maintain a conforming products list (CPL) of BAIDs that have been found to meet the Model Specifications. These proposed revisions are based, in part, on input from interested parties during an open comment period.

**DATES:** Written comments may be submitted to this agency and must be received no later than December 6, 2010.

**ADDRESSES:** You may submit comments identified by DOT Docket ID Number NHTSA-2010-0033 by any of the following methods:

- **Electronic submissions:** Go to <http://www.regulations.gov>. Follow the online instructions for submitting comments.
- **Fax:** 202-493-2251.
- **Mail:** Docket Management Facility, M-30, U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

- **Hand Delivery or Courier:** West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Eastern Time, Monday through Friday, except Federal holidays.

Regardless of how you submit your comments, you should identify the Docket number of this document.

**Instructions:** For detailed instructions on submitting comments and additional information, see <http://www.regulations.gov>. Note that all comments received will be posted without change to <http://www.regulations.gov>, including any personal information provided. Please see the "Privacy Act" heading below.

**Privacy Act:** Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review the complete User Notice and Privacy Notice for Regulations.gov at <http://www.regulations.gov/search/footer/privacyanduse.jsp>.

**Docket:** For access to the docket to read background documents or comments received, go to <http://www.regulations.gov> at any time or to West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Eastern Time, Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** For technical issues: Ms. De Carlo Ciccel, Behavioral Research Division, NHTSA-131, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590; Telephone number: (202) 366-1894; E-mail: [decarlo.ciccel@dot.gov](mailto:decarlo.ciccel@dot.gov). For legal issues: Ms. Jin Kim, Attorney-Advisor, Office of the Chief Counsel, NCC-113, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590; Telephone number: (202) 366-1834; E-mail: [jin.kim@dot.gov](mailto:jin.kim@dot.gov).

**SUPPLEMENTARY INFORMATION:**

**I. Background**

In 1992, the National Highway Traffic Safety Administration (NHTSA) adopted and published Model Specifications for Breath Alcohol Ignition Interlock Devices (BAIDs). (57 FR 11772.) Ignition interlocks are alcohol breath-testing devices installed in motor vehicles that require the driver to provide a breath sample in order to start the engine and to provide a breath sample periodically while the engine is running. If the breath sample provided by the driver contains more than a predetermined alcohol concentration, the ignition interlock device prevents the vehicle from starting.

Before NHTSA adopted the Model Specifications, a number of States passed laws authorizing the use of "certified" BAIDs. However, there was no single standard or test procedure among the States for certifying BAIDs. Manufacturers of ignition interlock devices requested that the Federal Government develop and issue standards for certifying such devices rather than leaving the industry subject to numerous State standards and test requirements. After notice and comment, NHTSA adopted the Model Specifications for BAIDs to provide a degree of consistency.

Since the Model Specifications were adopted in 1992, many States have incorporated them or some variation into their certification requirements. Persons required to use BAIDs are generally under the direct supervision of a court or another State agency (e.g., Motor Vehicle Administration). As of March 2010, 47 States and the District

of Columbia allow the use of BAIDs for some driving while intoxicated (DWI) offenders. Of these States, 22 mandate the use of BAIDs for repeat DWI offenders, and 13 mandate or highly incentivize the use of BAIDs by all DWI offenders, including first-time offenders.

While many States have incorporated the Model Specifications to certify BAIDs used by DWI offenders, there remains considerable variability among State certification requirements. Due to this variability and to rapid technological advances in the industry, States and manufacturers of BAIDs have requested that NHTSA test the devices against the Model Specifications and maintain a conforming products list (CPL) of devices found to meet the Model Specifications, similar to CPLs that NHTSA maintains for other breath alcohol measuring devices, such as Alcohol Screening Devices, Evidential Breath Testers, and Calibrating Units for Breath Alcohol Testers.

In response to these requests, NHTSA proposes to revise and update the 1992 Model Specifications, add provisions for the agency to conduct conformance testing of BAIDs, and maintain a CPL of BAIDs that have been found to meet those Model Specifications. This proposal is not intended to take the place of any State certification requirements; rather, it would establish a voluntary testing and conformance program.

In advance of these proposed revisions of the 1992 Model Specifications, NHTSA published a request for comments on February 15, 2006. (71 FR 8047.) NHTSA explained that it was interested in obtaining comments from interested parties in 13 specific areas:

(1) **Accuracy and precision requirements.** Is the current set point of 0.025 grams of alcohol per 210 Liters of air (g/dL) appropriate or should it be changed? Are the current specifications for 90 percent accuracy at 0.01 g/dL above the set point in the unstressed testing conditions, and 90 percent accuracy at 0.02 g/dL above the set point in the stressed testing condition appropriate?

(2) **Sensor technology.** The 1992 Model Specifications do not address what type of sensor technology should be used to satisfy those performance requirements. Should the Model Specifications limit sensor technology to alcohol-specific sensors (such as fuel cell technology based on electrochemical oxidation of alcohol) or other emerging sensor technologies? Or, should NHTSA not specify the sensor technology and rely on performance requirements?

(3) **Sample size requirements.** The 1992 Model Specifications set the minimum breath sampling size at 1.5 Liters. Informal comments received over the years have suggested that this requirement may be too high. Should NHTSA consider lowering the minimum breath sampling size requirement? Should NHTSA include a minimum sample size and minimum back pressure at the input-mouthpiece of the device?

(4) **Temperature extreme testing.** The 1992 Model Specifications call for testing at -40 °C, -20 °C, +70 °C and +85 °C, but allow for the removability of the alcohol sensing unit so that it may be kept at an artificial temperature when the vehicle may be subject to extremely cold or hot temperatures. Is this approach to extreme temperature testing sufficient, or should it be more stringent?

(5) **Radio Frequency Interference (RFI) or Electromagnetic Interference (EMI) Testing.** The RFI testing protocol in the 1992 Model Specifications uses power sources that are no longer commonly in use. New power sources that may interfere with the operation of BAIDs (e.g., cell phones) have output power commensurate with equipment in use today. What are the appropriate levels to measure RFI/EMI?

(6) **Circumvention testing.** The 1992 Model Specifications offer a number of procedures for evaluating whether existing devices can be easily circumvented. Are these procedures sufficient or should new or modified procedures be incorporated into the Model Specifications?

(7) **The Vehicle-Interlock Interface.** Anecdotal reports from ignition interlock manufacturers have suggested that it is sometimes difficult to install existing interlock systems in some of the newer electronic ignition systems. Should NHTSA establish any guidelines regarding the vehicle-interlock interface?

(8) **Calibration stability.** Is the duration of calibration stability testing sufficient? Should ignition interlocks be required to hold their calibration for a longer period of time, thereby requiring less frequent calibration checks?

(9) **Ready-to-use Times.** Should NHTSA establish a "ready-to-use" time period for extreme cold temperatures, such that devices must operate within a given period of time under extreme cold conditions?

(10) **NHTSA testing.** Should NHTSA undertake the responsibility to evaluate ignition interlocks against its Model Specifications and publish a Conforming Products List (CPL) of devices meeting those specifications?

(11) *International Harmonization.* Is it important to harmonize the ignition interlock Model Specifications with standards in other parts of the world, such as the European Union, Canada, and Australia?

(12) *Specifications for Ignition Interlock Programs.* Does the ignition interlock community (users, manufacturers, States, etc.) favor NHTSA development of an interlock program, in addition to Model Specifications for devices?

(13) *Acceptance Testing.* NHTSA's current Model Specifications involve "type-testing" (i.e., testing particular models of BAIDs for conformance) of various models of BAIDs. Should NHTSA establish standardized acceptance-testing procedures (i.e., testing each individual device for conformance), instead of the current type-testing guidelines? What testing should be included in such Model Specifications? Who should conduct the testing?

In addition to the above 13 specific areas, NHTSA's 2006 notice solicited comments on other areas that might enhance the revisions of the Model Specifications. Comments were received from five manufacturers of interlock devices, five State government representatives, two automobile manufacturers, one association of interlock installers and the European Committee for Electrotechnical Standardization (CENELEC). Today's notice responds to these comments in setting forth the agency's proposal.

In addition, this notice sets forth the proposed procedures for submitting BAIDs for NHTSA testing (Appendix A) and re-examination of BAIDs that have been tested (Appendix B).

## II. Response to Comments

The comments were supportive of the agency's proposal to revise the Model Specifications, noting that they had served well in organizing the interlock field but that some adjustments were warranted to assure more consistency in the quality of equipment in use today.

### A. Set Point, Accuracy and Precision Requirements

There was a lot of variability among comments on the alcohol set point (i.e., Breath Alcohol Concentration (BrAC) at which a BAID is set to lock the ignition). Two commenters stated that the 1992 Model Specification requirements for set point was appropriate and should not be changed. One State representative recommended a 0.025 g/dL set point for adults and a 0.02 g/dL set point for minors. Other State representatives commented that

the alcohol set point could be more stringent. One commenter stated that several States already use a 0.02 g/dL set point.

NHTSA proposes to lower the set point for testing BAIDs from 0.025 g/dL to 0.02 g/dL. This is the critical point that is used in the Breath Alcohol Screening Devices to indicate the presence of alcohol. Accordingly, for listing on the Confirming Products List (CPL), NHTSA proposes to test BAIDs that are capable of locking out at a set point of 0.02 g/dL. NHTSA believes that 0.02 g/dL is an appropriate set point because it is an appropriate level to test the presence of alcohol among offenders using ignition interlocks and it is our understanding that the technology is available for BAIDs to have a set point at 0.02 g/dL.

A few commenters stated that the 1992 Model Specifications for accuracy and precision were appropriate. Most commenters indicated that with improved technology, a greater degree of accuracy was possible, but did not specify to what degree. One interlock manufacturer advocated 95 percent accuracy with a precision of 19 out of 20 test trials at 0.01 g/dL above the set point for unstressed conditions (i.e., normal) and 100 percent accuracy and with a precision of 20 out of 20 test trials at 0.02 g/dL above the set point for stressed conditions (i.e., atypical, such as extreme temperatures).

Accuracy is the degree to which a BAID measures the BrAC correctly. For example, for a BAID to be accurate, a breath sample with no alcohol present (0.000 g/dL) must not lock the ignition. Precision is the degree to which that same measure can be repeated. In the previous example, for that BAID to be precise, that same alcohol free breath sample should not lock the ignition 20 out of 20 test trials.

NHTSA agrees with the commenters that because of improved technology, BAIDs should be subject to a higher degree of accuracy and precision. NHTSA proposes to define the accuracy and precision requirements for BAIDs by testing at  $\pm 0.012$  g/dL above and below the nominal set point of 0.02 g/dL, i.e., 0.032 g/dL and 0.008 g/dL, respectively. At 0.032 g/dL, not more than 1 ignition unlock in 20 trials would be allowed. At 0.008 g/dL, not more than 1 ignition lock in 20 trials would be allowed. No ignition locks in 20 trials would be allowed at 0.000 g/dL. This increases the accuracy from 90 percent to 95 percent at  $\pm 0.012$  g/dL above and below the nominal set point of 0.02 g/dL, and 100 percent at 0.000 g/dL. NHTSA determined these proposed test

levels by using standard statistical techniques for small samples.

### B. Sensor Technology

Most commenters stated that it is important to require alcohol-specific technology in the Model Specifications, but that the particular sensor design should not be specified. A small group, including States, favored the use of a particular sensor design (e.g., fuel cell). One interlock manufacturer stated that a non-alcohol-specific technology, such as a semi-conductor that senses alcohol differently and costs about 50 percent less than a fuel cell, was an economic alternative to the fuel cell.

While alcohol-specific sensor technologies have made great advances, this proposal does not limit the sensor technology used in the BAIDs as long as the BAID meets the performance requirements of the Model Specifications. We believe that this approach will allow a wider variety of options, including the use of emerging technologies as they become available.

### C. Sample Size Requirement

Most commenters advocated lowering the current 1.5 Liters (L) minimum sample size (to either 1.2 L or 1.0 L). A subset of these commenters felt that anything lower than 1.2 L should be set only on recommendation of a physician. One commenter thought that a 1.5 L air sample was not enough to ensure an accurate measure of the alcohol content. NHTSA agrees with the recommendation to lower the minimum sample size to 1.2 L and proposes a minimum 1.2 L sample size. NHTSA believes that, at this level, accuracy can be attained and that users will be able to deliver this smaller sample size.

Some commenters felt that a minimum back pressure, which controls the force of the air entering the BAID, was not necessary if the sample size was not lower than 1.0 L. One commenter suggested requiring 1.2 L sample size with a minimum back pressure and a flow rate of 0.2 L/second. A manufacturer suggested requiring 1.2 L sample size with a back pressure of 20 hectoPascal (hPa) (e.g., 2 kiloPascals (kPa)) and a flow rate of 0.1 L/sec. One State suggested an exhale-inhale-exhale pattern as an alternative to setting a standard. Two States suggested a 1.2 L sample size with back pressure, temperature and time requirements. Two commenters felt that NHTSA should only set the minimum sample size, and should not prescribe the means by which the sample delivery would be accomplished.

In addition to lowering the minimum sample size to 1.2 L as discussed above,

NHTSA proposes to require a minimum flow rate of 0.1 L/sec. Flow rate is the length of time that a sample breath is delivered into the BAID. NHTSA believes that a 0.1 L/sec minimum flow rate is a level that will enable more people to deliver an adequate sample. By lowering the minimum sample size and adding a minimum flow rate, NHTSA does not believe that specifying a minimum back pressure is necessary. NHTSA believes that this proposal will make the BAID available to a larger population of users.

#### *D. Extreme Temperature Testing, Removable Sensing Heads or Units*

One interlock manufacturer suggested that NHTSA test for extreme temperature at  $-45^{\circ}\text{C}$ , as temperatures reach that level in high latitudes and high altitudes. Another interlock manufacturer suggested that NHTSA leave the testing temperature unchanged and continue to allow the sensing unit to be removed from the vehicle. Most commenters felt that the current testing temperature extremes of  $-40^{\circ}\text{C}$  and  $+85^{\circ}\text{C}$  were appropriate, but did not object to tests at more extreme temperatures. The CENELEC suggested that the component of the device that is mounted in the engine compartment be tested for  $+125^{\circ}\text{C}$  in addition to  $-45^{\circ}\text{C}$ . CENELEC further suggested that the  $-45^{\circ}\text{C}$  temperature test be conducted at 75 percent of nominal battery voltage because extreme temperatures can reduce available voltage from a vehicle battery.

NHTSA proposes to retain the current extreme temperature tests at  $-40^{\circ}\text{C}$  and  $+85^{\circ}\text{C}$ . The agency believes that the current temperature range is reasonably representative of the environments encountered in the United States. However, NHTSA proposes to conduct additional high temperature tests for components of the BAID installed in the passenger compartment (at  $+49^{\circ}\text{C}$ ) and in the engine compartment (at  $+85^{\circ}\text{C}$ ), and to specify the humidity level for these high temperature tests. Further, NHTSA proposes to discontinue testing at  $-20^{\circ}\text{C}$  and  $+70^{\circ}\text{C}$  because our experience indicates that testing at the extreme temperatures is sufficient.

NHTSA also agrees that the  $-40^{\circ}\text{C}$  temperature test should be performed at 9 volts, which is representative of 75 percent of the nominal battery voltage (i.e., 12-volt automobile battery). NHTSA believes that the test should be conducted at this voltage because vehicles often do not operate at the optimal battery voltage. Accordingly, NHTSA proposes to test BAIDs using a 9-volt direct current (DC) power source,

simulating a 12-volt DC battery operating at low temperatures.

Many commenters stated that NHTSA should not allow the removal of the sensing unit because BAIDs are expected to operate at a variety of ambient temperature conditions. One State favored a removable mouthpiece (to protect users' lips from extreme temperatures), rather than a removable sensing unit, and another State favored a prescribed warm-up period. NHTSA agrees with the commenters that the sensing unit should not be removable because it can more easily be damaged or mishandled, leading to frequent repairs and increased cost. Accordingly, NHTSA proposes to test only BAIDs without removable sensing heads or units. (The agency does not object to BAIDs with a removable mouthpiece.)

#### *E. RFI or EMI Testing*

Commenters noted that appropriate power for RFI testing should be considered because an increasing number of electronic devices are being operated in close proximity to BAIDs, such as gaming, remote keyless entry, portable medical and Bluetooth-capable devices. Two BAID manufacturers suggested that the European Standard for EMI be adopted because it describes electromagnetic compatibility of vehicles for broadband and narrowband interference and shielding. Two commenters noted that CB radios were more relevant sources of interference and that the CENELEC standard is unnecessarily restrictive on EMI. A State government commenter suggested that the Society of Automotive Engineers (SAE) J551 Vehicle Electromagnetic Immunity-Bulk Current Injection Standard be applied to BAIDs.

NHTSA agrees that the current specifications do not adequately define or describe RFI/EMI tests. NHTSA proposes to test BAIDs for emissions and transmissions of RFI/EMI and immunity to RFI/EMI using the SAE Surface Vehicle Standard J1113 series for Class C devices (devices essential to the operation or control of the vehicle) and the International Special Committee on Radio Interference (CISPR), Subcommittee of International Electrotechnical Committee (IEC), specifically CISPR 25, for RFI/EMI testing. NHTSA proposes these tests because we believe that they represent a broad consensus in the industry.

#### *F. Tampering and Circumvention Testing*

There was some criticism that the 1992 Model Specifications for tampering and circumvention testing are confusing and lack specificity. One

BAID manufacturer felt that the U.S. should adopt the CENELEC standards for charcoal filters, water bubbler, condensation through a long cool tube and pressurized air, and interlock bypass. Another BAID manufacturer commented that there are aspects of the circumvention detection specifications that are difficult to quantify because different companies develop their own proprietary anti-circumvention strategies (e.g., a learned hum code or toot sequence). This manufacturer commented that program standards should address this by imposing consequences for tampering with devices. Three State government commenters suggested that NHTSA should set higher anti-circumvention standards and have a counter system or data log that records attempts to start the vehicle by bypassing the ignition. One State thought that the use of time, pressure, differing blow patterns and breath temperature should help prevent circumvention. States believed that device design should not present challenges to the user, and that the individual's breath signature should be used as the basis for anti-circumvention efforts.

Although NHTSA believes that an individual's breath signature (i.e., a person's unique breath pattern) is a good goal for the future, NHTSA's proposal does not include individual breath signature as an anti-circumvention measure. NHTSA does not believe that technology is sufficiently advanced to warrant including individual breath signature in this proposal. However, NHTSA agrees with commenters that the circumvention requirements are confusing. Accordingly, the agency proposes to clarify and specify the requirement for circumvention and tampering tests and to specify that the BAID must have tamper proof seals to indicate when a BAID has been disconnected from the ignition.

#### *G. Vehicle-Interlock Interface*

Interlock manufacturers and providers supported a standard interlock-vehicle interface, and recommended that NHTSA require all vehicles to have either a communications bus interface or another hard-wired interface connector for specific use for any ignition interlock device. Other commenters suggested that a common interface would be a great convenience since it would make installation easier. However, two automobile manufacturers commented that although there may be benefits, requiring all vehicles to have a common interface for BAIDs presented significant challenges

that could compromise vehicle ignition security systems and anti-theft immobilizing technologies.

While we understand the installation convenience that would be afforded by a common vehicle interlock interface, such a requirement goes beyond the scope of this proposal, which is limited to the BAID itself and not to changes to the vehicle.

#### H. Calibration Stability and Service Interval

NHTSA received comments regarding both calibration stability and service interval requirements. Some manufacturers commented that NHTSA should establish separate requirements for the minimum period of calibration stability and the service interval. NHTSA notes that these two requirements are interrelated. If a BAID's calibration remains stable for a given period of time, it follows that service will be required after that period to verify the calibration of the BAID. For clarity, NHTSA proposes to define calibration stability as the ability of the BAID to hold its accuracy and precision over a defined time period and calibration interval as the maximum time period that a BAID may be used without a calibration check, after which the ignition must lock. NHTSA proposes to define the service interval as the maximum time period that a BAID may be used without maintenance.

For both the calibration interval and the service interval, most commenters stated that the BAID should enter a lockout countdown to notify the BAID user that the BAID needs a calibration check or maintenance, service or data download, and the BAID should prevent the vehicle from starting at the end of the lockout countdown period. In response to these comments, NHTSA proposes to incorporate a 7-day lockout countdown for both calibration interval and service interval. NHTSA believes that requiring a lockout countdown for both the calibration interval and the service interval is important to ensure that the BAID is accurately reading breath samples and is properly working. NHTSA further proposes that during the lockout countdown period, the BAID should notify the user of the time remaining before the ignition locks. However, NHTSA declines to impose any countdown or lockout requirement for downloading data, as this decision should properly be left to the States or the courts for decision.

NHTSA proposes to revise the calibration stability requirements. The 1992 Model Specifications called for calibration stability for 7 days beyond the manufacturer's designated

calibration stability period of 30, 45, or 60 days. For example, if the manufacturer required that the calibration of BAIDs be checked after 60 days, the BAID would need to hold the calibration for 67 days. NHTSA now proposes that BAIDs must hold calibration for a minimum 30 days plus the 7-day lockout countdown described previously (i.e., 37 days) in order to conform to the Model Specifications. Although some manufacturers have BAIDs that are claimed to hold calibration for a longer time period, NHTSA proposes to test the calibration stability at 37 days (i.e., 30 days plus the 7-day lockout countdown) and to require lockout after 37 days. Accordingly, NHTSA proposes that only BAIDs that meet both the 37-day calibration stability test and the 30+ 7-day lockout countdown function will be listed on the CPL.

NHTSA also proposes to add service interval requirements. The 1992 Model Specifications did not specifically require a service interval period. Although the term "service interval" is used in the 1992 Model Specifications, that term was used only in relation to calibration stability. It is our understanding that some States use this term to denote the time period for maintenance and data download as well as calibration stability checks. Commenters from State governments recommended that NHTSA require that BAIDs have a service interval not greater than 30 days, plus a 7-day lockout countdown. NHTSA agrees with these comments and proposes to incorporate this requirement in the Model Specifications because requiring regular maintenance checks is important to ensure that the BAID is properly working. As noted above, we do not specify a lockout requirement for data download.

#### I. Ready-to-Use Times and Retest

Commenters stated that a quicker ready-to-use time is possible with newer technology. A commenter stated that one of the biggest complaints with users of BAIDs is the waiting time for the breath test, and that reducing the waiting time may increase the acceptance of BAIDs. Several manufacturers indicated that a faster ready time of 3 minutes at low temperatures was achievable.

NHTSA agrees that with current technology, BAIDs can be ready for use faster than the times provided under the 1992 Model Specifications. NHTSA proposes that at temperatures above  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ), BAIDs should be ready for use in 1 minute or less and be ready to retest in 1 minute or less. For

temperatures at  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ), NHTSA proposes that the BAID should be ready for use in 3 minutes or less and ready to retest in 3 minutes or less. NHTSA proposes to test this performance.

NHTSA does not intend that retests be conducted while the vehicle is moving, but rather while the engine is running with the vehicle stopped in a safe location on the side of the road. The proposed Model Specifications make this point clear.

#### J. NHTSA Testing

Commenters favored a certified testing laboratory program. Most advocated a NHTSA test program and the development of a Conforming Products List (CPL) based on the Model Specifications. One commenter favored having a single private testing laboratory certified by NHTSA for this purpose. Several manufacturers noted significant problems with State certification requirements leading to questionable test results for some products. In general, both manufacturers and States favored a NHTSA test program because it would organize and standardize the industry and exclude less effective BAIDs. One commenter suggested that NHTSA require BAID re-certification in the event of an instrument design change and/or at some reasonable interval.

NHTSA proposes to test BAIDs for conformance with the Model Specifications. See Appendix A for proposed BAID submission procedures. NHTSA also proposes to maintain and publish periodically a CPL with BAIDs that have been tested and found to conform to the Model Specifications. NHTSA proposes to manage this new program as it does its other breath alcohol instrument testing programs, including the re-examination of BAIDs at its sole discretion (Appendix B) and requiring manufacturers to inform NHTSA of any changes or modifications to a tested BAID. As with NHTSA's other testing programs, NHTSA also proposes to require manufacturers to submit a quality assurance plan (QAP) for BAIDs being tested. A QAP is a manufacturer's plan for maintaining the integrity and the calibration of a BAID. NHTSA proposes that the QAP include the following information: instructions for checking the calibration of the BAID (i.e., recommended calibrating unit, BrAC of 0.02 g/dL, agreement not greater than  $\pm 0.005$  BrAC, verification of accuracy of readout, actions to take for failed calibration check), instructions for downloading the data from the data logger, instructions to maintain the BAID, instructions on checking for

tampering, and any other information regarding quality assurance unique to the instrument. See Appendix C, the proposed sample QAP template.

Testing of BAIDs will be subject to the availability of Federal funds. If Federal funds are not available, NHTSA will discontinue testing BAIDs until funds become available.

#### K. International Harmonization

There was considerable variability from commenters on this issue. Those favoring harmonization with the CENELEC standards argued that in an increasingly global marketplace, common standards would benefit both economic and safety concerns. Some against harmonization stated that aspects of the CENELEC standard are potentially restrictive and costly. Others opposed harmonization because the U.S. organized the BAID industry by emphasizing safety and design flexibility in a way that encouraged the domestic industry and avoided costly requirements.

NHTSA believes that there are some benefits to harmonizing some standards, and has proposed to incorporate aspects of CENELEC standards as identified elsewhere in this proposal.

#### L. Interlock Program Specifications

Some commenters stated that interlock program specifications or interlock program guidelines (*i.e.*, programs to implement the use of BAIDs) have been and should remain a function of State government. Others largely expressed support for NHTSA development of interlock program guidelines, especially in the areas of installation requirements, monitoring and recalibration of devices, and recognizing device tampering. While NHTSA believes that such a program is important, today's notice addresses only BAID performance criteria and testing of BAIDs. NHTSA may explore interlock program guidelines in a future action.

#### M. Acceptance Testing

Some commenters stated that acceptance testing is being performed by some States, but that the criteria vary among those States. These commenters stated that NHTSA should establish standardized acceptance-testing procedures in addition to the 1992 Model Specifications. Several commenters requested that the term "acceptance testing" be more clearly defined. One commenter recommended that NHTSA establish enforceable guidelines, mandatory audits and periodic re-examinations.

NHTSA defines "acceptance testing" as the pass-fail evaluation of each individual device performed before placing that device into service. Because of limited resources, NHTSA proposes to conduct "type-testing" (*i.e.*, testing of a sample of a particular model of BAID, rather than every device manufactured).

#### N. Additional Comments

1. Two commenters suggested that BAID manufacturers make available the operating software codes of the BAIDs, including disclosure of how the BAIDs monitor their own malfunctions and the criteria the devices use to trigger recalls. NHTSA does not believe that making a manufacturer's proprietary software publicly available is desirable or necessary, as the agency's proposal sets forth performance specifications, not design specifications. Moreover, making such information public may lead to increased circumvention and tampering.

2. Commenters suggested that data loggers distinguish calibration tests from user samples. NHTSA agrees that distinguishing such information would be useful for monitoring the BAID user. Accordingly, NHTSA proposes that the BAID must include a data logger that will distinguish calibration tests from user samples as well as record all start attempts and outcomes, such as emergency override, circumvention, tampering, and BrAC for each start attempt. The data must be presented in chronological order (*i.e.*, by date and time of event). See Appendix D for a sample format for downloaded data from the data logger. The audit trail should also indicate the version of the metrological software (*i.e.*, the BAID's operating system) in use. All printed and downloaded reports should indicate the software version. NHTSA proposes to test these features.

The agency understands that some customers (such as States) request certain changes to the BAID, so that read-out data is presented in a particular format. Such customization is generally accomplished through software modifications. Testing customer-driven software modifications is beyond the scope of this program. Moreover, if such modifications were permitted to be performed to the internal software of the BAID at a customer's behest, the integrity of the CPL would be compromised as the BAID tested could then differ from customized devices in production. However, NHTSA is aware that States (and local jurisdictions) use different set points in their interlock programs. Therefore, we do not believe that changes to the set point, alone, should be deemed impermissible modifications. Accordingly, the

agency's proposal does not allow any modifications of internal BAID software at the behest of customers, except for adjustments to the set point. (We note that for testing purposes, NHTSA proposes to test BAIDs with an alcohol set point of 0.02 g/dL.) Manufacturers wishing to accommodate a customer's interest in data formatting options should do so by providing a port that allows connection of a peripheral device with its own formatting software. Manufacturers are advised that, when submitting a BAID to NHTSA for testing, they must submit the basic model without any customized or add-on software.

3. Commenters suggested that the BAID memory should be located in a fixed control box. NHTSA agrees with these commenters and proposes to add this to the General Requirements and BAID Features because a fixed control box provides less opportunity for potential damage to the BAID memory.

4. Commenters suggested that restarts should be allowed only if a vehicle stalls, but not if the ignition is intentionally turned-off or if a BAID malfunctions or is awaiting a retest. NHTSA proposes that a restart (*i.e.*, without a breath sample) should be allowed when the vehicle stalls, provided the restart is accomplished in no more than 20 seconds. NHTSA also proposes that in all other situations where the vehicle malfunctions, the vehicle should be prevented from starting without a breath test.

Commenters further suggested that if a BAID malfunctions or fails, the device should default to preventing the vehicle from starting. NHTSA agrees with the commenters and proposes that if a BAID malfunctions or fails (*e.g.*, improper voltage, temperature exceeding operating range, dead sensor, etc.), the BAID should prevent the vehicle from starting.

5. Some commenters stated that an emergency override was a useful feature. NHTSA declines to propose that BAIDs be required to have an emergency override feature (*i.e.*, the ability to start the vehicle without a breath test) in order to conform with the Model Specifications. However, should a BAID be equipped with an emergency override feature, NHTSA proposes to allow its activation to start the vehicle only once. After that, the BAID must indicate the need for service and record the use of the emergency override. No additional emergency overrides would be allowed during the lifetime of the BAID installation. The agency proposes to test this feature. NHTSA also proposes that this emergency override feature have a default to prevent an

override from being used when the BAID malfunctions or fails. See Section II, N, 4 above.

6. A commenter suggested that the BrAC test results be displayed to the driver. NHTSA declines to propose that BAIDs display the BrAC test results to the driver and does not propose to add this requirement in the Model Specifications. NHTSA believes that the role of the BAID is to detect the presence of alcohol and to prevent the driver from operating the vehicle if alcohol is present. We believe that displaying the BrAC goes beyond the purpose of the BAID. Accordingly, NHTSA does not propose to test BAIDs for the accuracy of the BrAC display. NHTSA proposes to test only the accuracy of the notifications to a BAID user that are related to the features tested by NHTSA, such as warm-up time, retest, calibration check and service interval.

In addition, NHTSA proposes to remove a number of tests for optional features identified in the 1992 Model Specifications.

7. A commenter suggested that an interlock-specific tone (other than a honking horn) be used to alert outsiders to BAID violations. At this time, NHTSA does not believe that audible sounds or lights to alert the public to interlock violations are necessary, and does not include the suggestion in this proposal.

8. A commenter suggested that several CENELEC standards be adopted into the Model Specifications, including a dust test, a drop test for removable sensor heads, vibration tests, and protection against reverse polarity on all circuits. That commenter also suggested that instruction guides or manuals be provided to the interlock installers and user.

In two decades of experience, NHTSA has received no reports suggesting that dust is an issue or source of concern in BAIDs installed in vehicles. Therefore, we are not proposing a dust standard. As the agency's proposal does not allow the removal of the sensor head, we are not proposing a drop test. NHTSA proposes to update the vibration and cigarette smoke tests from the 1992 Model Specifications to incorporate aspects of the CENELEC standard (see Test 7 and Test 12, respectively). NHTSA agrees with the commenter that electrical properties of the vehicle (contact safety, etc.) must not adversely affect or be affected by a properly installed BAID. NHTSA also agrees that instruction guides or manuals should be made available to interlock installers and users.

#### *O. Other Proposed Revisions*

The agency proposes to re-organize the Model Specifications to improve clarity. NHTSA also proposes to delete the commentary sections of the 1992 Model Specifications because these sections are no longer necessary. Also, we have not retained the previous organization of sections on safety and utility, and we have specified in more detail the tests for humidity, cigarette smoke, retest, and circumvention and tampering. In addition, the proposed Model Specifications no longer include a separate test for user displays, but rather incorporate the test for user display under other tests (e.g., warm up time, retest, calibration interval, service interval). The proposed Model Specifications delineate conformance tests and performance requirements.

NHTSA proposes to delete the following terms as no longer applicable: Safety and Utility (Safety Feature, Utility Feature, and Optional Feature), Stress Tests, Certification Tests, Clearance Rates, Device, Fail-safe, False-negative, False-positive, High end and Low end. NHTSA also proposes to add three terms—calibration stability, calibration interval, and service interval. See Section II, H.

NHTSA proposes to delete the Certification Test Summary and the Equipment List that appeared in Appendices A and B because these provisions are obsolete, and relevant information is incorporated in the Tests.

NHTSA proposes to add two tests to the Model Specifications—High Altitude (Test 11) and Acetone (Test 13). NHTSA believes that because high altitudes may affect semi-conductor type alcohol sensors, this condition should be tested. NHTSA believes that acetone should be tested because it is the most common interfering substance for BAIDs. Finally, of the tests listed, Test 17 (Data Integrity and Format) must be performed last as this test checks the integrity of the downloaded data. See also Appendix D for a sample format for downloaded data from the data logger.

In addition, NHTSA proposes that in order to be listed on the CPL, manufacturers must submit a self-certification, certifying that the manufacturer meets the requirements of the U.S. Department of Health and Human Services Public Health Services, Food and Drug Administration's (FDA) Good Manufacturing Practices regulations for devices used for medical purposes (21 CFR Part 820), and that the device's label meets the requirements contained in FDA's Labeling regulations for devices used for medical purposes (21 CFR 809.10), even if the devices are

not to be used for medical purposes. If NHTSA becomes aware that a manufacturer of a BAID on the CPL is not in compliance with the requirements in FDA's Good Manufacturing Practices regulations for devices used for medical purposes or that the device's label does not comply with the requirements in FDA's labeling regulations for devices used for medical purposes, NHTSA may remove the manufacturer's BAID from the CPL.

The agency encourages interested parties to review carefully this notice and the Model Specifications set forth below, and to submit comments in the manner identified in Addresses above.

These proposed Model Specifications, if adopted in final, would not have the force of regulations and are not binding. States and others may adopt these Model Specifications and rely on NHTSA's type-test results or they may conduct their own tests according to their own procedures and specifications.

After consideration of the comments, the agency proposes the Model Specifications for Breath Alcohol Ignition Interlock Devices as set forth below.

Authority: 23 U.S.C. 403; 49 CFR 1.50; 49 CFR part 501.

#### **Model Specifications for Breath Alcohol Ignition Interlock Devices (BAID)**

##### *A. Purpose and Scope*

###### *1. In General*

The purpose of these specifications is to establish performance criteria and test methods for breath alcohol ignition interlock devices (BAIDs), commonly referred to as alcohol interlocks or ignition interlocks. BAIDs are breath alcohol sensing instruments designed to be connected to the ignition system in a way that prevents the motor vehicle from starting unless the driver first provides a breath sample whose alcohol concentration is below the set point into the BAID. If the measured breath alcohol concentration (BrAC) is at or above a set level, the ignition is locked and the vehicle will not start. BAIDs are currently being used as court sanctions as well as administrative conditions of licensure. Drivers convicted of Driving While Intoxicated (DWI) may be required to use BAIDs in their vehicle under court supervision or as part of a required path to full reinstatement of driving privileges. These specifications are intended for use in conformance testing of BAIDs installed in vehicles. BAIDs found to conform to these specifications will be placed on a conforming products list

(CPL) published in the Federal Register. NHTSA will periodically update this CPL. These specifications are voluntary and do not impose any compliance obligations on BAID manufacturers or others.

## 2. Limitations

NHTSA will test BAIDs for conformance with these Model Specifications on a first-come, first-served basis, subject to the manufacturer submission requirements of Appendix A. Any re-examination of BAIDs will be conducted at the agency's sole discretion, in accordance with the provisions of Appendix B. All tests are subject to the availability of Federal funds.

### B. Terms

**Alcohol**—Ethanol or ethyl alcohol (C<sub>2</sub>H<sub>5</sub>OH).

**Alcohol set point**—Breath Alcohol Concentration (BrAC) at which a BAID is set to lock the ignition.

**Breath Alcohol Concentration (BrAC)**—The amount of alcohol in a given amount of breath, expressed in weight per volume (w/v) based upon grams of alcohol per 210 liters (L) of breath, in accordance with the Uniform Vehicle Code, Chapter 11, Section 11-903.4 and 5.<sup>1</sup>

**Breath alcohol ignition interlock device (BAID)**—A device that is designed to allow a driver to start a vehicle if the driver's BrAC is below the set point and to prevent the driver from starting the vehicle if the driver's BrAC is at or above the set point.

**Breath Sample**—Normal expired human breath primarily containing air from the deep lung.

**Calibration Interval**—The maximum time period that a BAID may be used without a calibration check, after which the ignition must lock.

**Calibration Stability**—The ability of a BAID to hold its accuracy and precision over a defined time period.

**Circumvention**—An attempt to bypass the correct operation of a BAID, whether by use of an altered breath sample, by starting the vehicle without using the ignition switch, or by any other means without first providing a breath sample.

**Filtered air sample**—Any human breath sample that has intentionally been altered so as to remove alcohol from it.

**Interlock Data Logger**—A device within a BAID that records all pertinent events, dates, and times during the

period of installation and use of a BAID.

**Retest**—A breath test that is required after the initial engine start-up breath test and while the engine is running with the vehicle stopped in a safe location on the side of the road. This is also referred to as a running retest or a rolling retest.

**Service Interval**—The maximum time period that a BAID may be used without maintenance or data download, after which the ignition must lock.

**Simulator**—A device that produces an alcohol-in-air test sample of known concentration (e.g., a Breath Alcohol Sampling Simulator (BASS))<sup>2</sup> or a device that meets the NHTSA Model Specifications for Calibrating Units (72 FR 34742)).

**Tampering**—An attempt to physically disable, disconnect, adjust, or otherwise alter the proper operation of a BAID.

### C. General Requirements and Features of BAIDs

In order to be listed on NHTSA's Conforming Products List (CPL), a BAID must meet the following requirements:

The BAID must pass each of the conformance tests 1 through 17 in Section D, unless explicitly excluded from a test by the specific terms of these specifications.

Installation and service of the BAID in a vehicle must not compromise any normal function of the vehicle, including anti-theft functions, on-board computer functions, or vehicle safety features required by the Federal Motor Vehicle Safety Standards, and must not cause harm to the vehicle occupants. Care should be taken to protect against reverse polarity and damage to other circuits and to ensure that the BAID does not drain the vehicle's battery while in sleep mode (i.e., power save mode).

The BAID must not have a removable sensing head or unit, but may include the use of a detachable mouthpiece for breath sample delivery.

The BAID memory must be in a fixed control box.

The BAID must have tamper proof seals to indicate when a BAID has been disconnected from the ignition.

The BAID must be capable of locking out at a specified breath alcohol concentration. The submitted BAID will be tested at an alcohol set point of 0.02 g/dL with a minimum flow rate of 0.1 L/sec. Upon detecting an alcohol

concentration at or above that set point, the BAID must lock the ignition for a period of time before another test can be performed.

If the vehicle is equipped with a remote start device, the BAID must be installed so that the remote start function is bypassed or disabled so that a valid breath test must be performed before the vehicle may be started.

The BAID must include clear instructions to the driver (e.g., when to blow, when to wait, when to start the vehicle, when to retest, when a lockout countdown occurs, including the time remaining before the BAID locks the vehicle's ignition, and when to seek service).

Manufacturers must submit the operator's manual (user's guide or instructions to the user), the maintenance manual, and specifications and drawings fully describing the BAID to the Volpe Center.

In addition, manufacturers must submit the quality assurance plan (QAP) to NHTSA for approval. The QAP must include the following information: instructions for checking the calibration of the BAID (i.e., recommended calibrating unit, BrAC of 0.02 g/dL, agreement not greater than  $\pm 0.005$  BrAC, verification of accuracy of readout, actions to take for failed calibration check), instructions for downloading the data from the data logger, instructions to maintain the BAID, instructions on checking for tampering, and any other information regarding quality assurance unique to the BAID. See Appendix C for sample QAP template.

Manufacturer must also submit a self-certification to NHTSA, certifying that the manufacturer meets the requirements of the U.S. Department of Health and Human Services Public Health Services, Food and Drug Administration's (FDA) Good Manufacturing Practices regulations for devices used for medical purposes (21 CFR Part 820), and that the device's label meets the requirements contained in FDA's Labeling regulations for devices used for medical purposes (21 CFR 809.10), even if the devices are not to be used for medical purposes. (If NHTSA becomes aware that a manufacturer of a BAID on the CPL is not in compliance with the requirements in FDA's Good Manufacturing Practices regulations for devices used for medical purposes or that the device's label does not comply with the requirements in FDA's labeling regulations for devices used for medical purposes, NHTSA may remove the manufacturer's BAID from the CPL.)

The design of the BAID must include a data logger that will record all start

<sup>1</sup> Available from the National Committee on Uniform Traffic Laws and Ordinances, 107 South West Street, #110, Alexandria, VA 22314 (<http://www.ncutlo.org>).

<sup>2</sup> See NBS Special Publication 480-41, July 1981. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

attempts and outcomes, including an emergency override, delineation of calibration checks, circumvention, tampering, operator attempts to start the vehicle, and BrAC for each start attempt. The data must be presented in chronological order (*i.e.*, by date and time of event). See Appendix D for a sample format for downloaded data from the data logger. The manufacturer must provide NHTSA with a means of downloading the data from the data logger.

The BAID must track all changes to the metrological software and indicate the software version and date on all printed and downloaded reports. The BAID must not include any add-on or specialized software to meet the needs of a specific customer. Manufacturers wishing to accommodate a customer's interest in data formatting options should do so by providing a port that allows connection of a peripheral device with its own formatting software. We are aware that States (and local jurisdictions) use different set points in their interlock programs, and such changes to the set point, alone, would not be deemed impermissible. However, NHTSA will test BAIDs at an alcohol set point of 0.02 g/dL.

#### D. BAID Test Procedures

##### General Test Conditions

Unless otherwise specified in the conformance test, the following conditions apply to each test:

- Number of trials at each alcohol level = 20
- Ambient temperature: 22 °C ± 3 °C (71.6 °F ± 5.4 °F).
- Ambient atmospheric pressure: 97.5 kPa ± 10.5 kPa (25.7 and 31.9 inches Hg).
- Sample parameters: volume 1.2 liters; ambient flow rate 0.3 liters per second; maximum delivery pressure 2.5 kPa; temperature 34 °C (93.2 °F)
- Simulated breath samples will be generated by the BASS<sup>3</sup> or by a wet bath type calibrating unit that is listed on the NHTSA Conforming Products List for such devices. Solutions used in the calibrating device will be prepared as described in the NHTSA Model Specifications for Calibrating Units published June 25, 2007 (72 FR 34742).

##### Performance Requirements

Unless otherwise specified in the conformance test, the BAID must meet the following performance requirements in each test:

<sup>3</sup> See NBS Special Publication 480-41, July 1981. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

- Tests at 0.032 g/dL BrAC (grams alcohol/210 liters of air): not more than 1 ignition unlock in 20 trials is allowed.
- Test at 0.008 g/dL BrAC: not more than 1 ignition lock in 20 trials is allowed.
- Tests at 0.000 g/dL BrAC: no ignition lock in 20 trials is allowed.
- A BAID must be ready for use 1 minute after it is turned on. A BAID must be ready for a second test within 1 minute of a preceding test.

##### Conformance Tests

Unless otherwise specified in a test, these conformance tests need not be conducted in any particular order. Except when a test or portion of a test specifically requires the use of a motor vehicle, NHTSA may elect to use either a motor vehicle or a bench test set-up that simulates the relevant functions of a motor vehicle.

##### Test 1. Precision and Accuracy

Test the BAID at the following alcohol concentrations:

- a. 0.000 g/dL BrAC,
- b. 0.008 g/dL BrAC, and
- c. 0.032 g/dL BrAC.

##### Test 2. Breath Sample Volume and Flow Rate

Use a mass flow meter to monitor sample volume. Conduct each test (a-d) five times.

- a. Test at 0.000 g/dL BrAC with sample volume 1.0 liter. The BAID must lock the ignition and indicate insufficient volume 5 out of 5 times.
- b. Test at 0.000 g/dL BrAC with sample volume 1.5 liters. The BAID must not lock the ignition 5 out of 5 times.
- c. Test at 0.000 g/dL BrAC with sample volume 1.2 liters at 0.1 L/s. The BAID must not lock the ignition 5 out of 5 times.
- d. Test at 0.000 g/dL BrAC with sample volume 1.2 liters at 0.7 L/s. The BAID must not lock the ignition 5 out of 5 times.

##### Test 3. Calibration Interval and Calibration Stability

Initialize the BAID to begin the calibration stability test. A BAID must not be re-calibrated after the start of Test 3. Conduct Test 1. Repeat Test 1 at 37 days. Test 2 and Tests 4-15 may be performed between these two Precision and Accuracy tests.

After 30 days, the BAID must prominently indicate a 7-day lockout countdown, *i.e.*, an indication that the BAID must be taken to a designated facility for a calibration check within 7 days or the ignition will lock and the event will be logged. Over the course of

the 7-day lockout countdown, the BAID must prominently indicate that the BAID needs a calibration check, the time remaining until ignition lockout, but the ignition must not lock. At the end of this 7-day lockout countdown, the BAID must prominently indicate that the BAID needs a calibration check and the ignition must lock.

##### Test 4. Input Power

Conduct Test 1b and Test 1c at the following input power conditions:

- a. Test at 11 VDC input power;
- b. Test at 16 VDC input power.

##### Test 5. Extreme Temperature and Humidity

Using a temperature/humidity chamber:

- a. Soak the BAID at -40 °C (-40 °F) for 1 hour, then conduct Test 1b and Test 1c at that temperature using 9 VDC input power.
- b. Soak the BAID at 49 °C (120 °F), 95 percent relative humidity for 1 hour, then conduct Test 1b and Test 1c at that temperature and humidity using 16 VDC input power.

c. This part of the test applies only to BAIDs with components installed in the engine compartment. Soak the components of the BAID that are installed in the engine compartment at 85 °C (185 °F), 95 percent relative humidity for 1 hour, then conduct Test 1b and Test 1c at that temperature and humidity using 16 VDC input power. The components that are installed in the passenger compartment should remain at ambient temperature and humidity conditions (see General Test Conditions).

##### Test 6. Warm Up Time at -40 °C

Using a temperature chamber, soak the BAID for 1 hour at -40 °C. With input power set at 9 VDC, the BAID must be ready to test in 3 minutes, and ready to retest in 3 minutes after being turned on. Conduct Test 6 five times. The BAID must indicate that it is ready to test or ready to retest in 3 minutes all five times. This test may be conducted in conjunction with Test 5 Extreme Temperature and Humidity.

##### Test 7. Vibration

Vibrate the BAID in simple harmonic motion on each of three main axes uniformly through the frequency schedule specified below. For components not intended to be mounted on the engine, vibrate according to Test 7a; for components intended to be mounted on the engine, vibrate according to Test 7b. If a BAID consists of several components connected by electrical wires or connected wirelessly,

vibrate these components separately. After completion of the vibration,

remove the BAID from the shake table and conduct Test 1b and Test 1c.

#### VIBRATION FREQUENCY SCHEDULE

Test 7	Frequency range, Hz	Number of cycles	Sweep rate, octave/min	Amplitude, inches 0 to peak	Acceleration, gravity (g), 0 to peak
a	10 to 500	10	1	0.2	3
b	10 to 500	10	1	0.08	15

#### Test 8. Retest

If a BAID includes a feature designed to detect whether the vehicle is moving, conduct Test 8 using a motor vehicle. If a BAID does not include a feature designed to detect whether the vehicle is moving, conduct Test 8 using a motor vehicle or a bench test set-up that simulates the relevant functions of a motor vehicle. Retests must not be conducted while the vehicle is moving, but must be conducted while the engine is running with the vehicle stopped in a safe location on the side of the road.

a. Within an interval of 5 to 7 minutes after a successful ignition unlock, using a 0.000 g/dL BrAC test sample, and while the ignition remains unlocked and the engine is running, the BAID must indicate that a second breath sample is required. Conduct Test 1b five times. The ignition must remain unlocked all 5 times.

b. Within an interval of 5 to 7 minutes after a successful ignition unlock, using a 0.000 g/dL BrAC test sample, and while the ignition remains unlocked and the engine is running, the BAID must indicate that a second breath sample is required. Conduct Test 1c five times. The ignition must remain unlocked, but the BAID must prominently indicate the need for a service call (i.e., this is an indication of a failed retest).

A failed retest must be identified as an alert condition and flagged on the data logger. A missed retest must be flagged on the data logger. After the driver is alerted to retest, if the engine is accidentally or intentionally powered off, the BAID must not unlock without a service call. If a BAID includes a feature designed to detect whether the vehicle is moving, perform the above tests with and without vehicle movement.

#### Test 9. Tampering and Circumvention

Attempt to start the ignition as indicated below. Conduct each test (a through f) five times. Each attempt to start the engine must be logged by the data logger.

a. "Hot wiring". Start the engine by electrically bypassing the BAID. The

data logger must record the ignition on with no breath test.

b. *Push start*. A motor vehicle must be used for this part of Test 9. Use a vehicle equipped with a manual transmission. Start the engine by pushing the vehicle with another vehicle or by coasting the vehicle downhill before engaging the clutch. The data logger must record the ignition on with no breath test.

c. *Un-warmed air sample*. Deliver an alcohol-free air sample of at least 2 liters into the BAID using an air filled plastic bag which is fitted to the sampling tube and squeezed in a manner that mimics a person blowing into the BAID. The ignition must remain locked.

d. *Warmed air sample*. Prepare a 12-ounce foam coffee cup fitted with a bubble tube inlet and a vent tube (rubber or tygon tubing) attached through the plastic lid. Fill the cup with 8 ounces of water warmed to 36 °C and attach the lid. Attach the vent tube to the BAID and pass an air sample of at least 2 liters through the bubble tube into the heated water and thence into the BAID. The flow rate must not be high enough to cause a mechanical transfer of water to the BAID. The ignition must remain locked.

e. *Cooled 0.032 BrAC sample*. Attach a 4 foot long tygon tube of 3/8 inch inside diameter which has been cooled to ice temperature to the inlet of the BAID, then test at 0.032 BrAC. The ignition must remain locked.

f. *Filtered 0.032 BrAC sample*. Prepare a 1 to 2 inch diameter 3 to 5 inches long paper tube loosely packed with an active absorbent material. Use loose cotton plugs to retain the absorbent in the paper tube. Pack the tube so that a person can easily blow 2 liters of air through the assembly within 5 seconds. Test the absorbent by passing a 2 liter 0.032 BrAC sample through the assembly within 5 seconds. If the air passing out of the BAID is found to have a concentration of 0.006 BrAC or less, prepare 5 tubes packed in the same manner, fit separately to the BAID and test at 0.032 BrAC. The ignition must remain locked.

#### Test 10. Restart of Stalled Motor Vehicle

Conduct Test 10 using a motor vehicle.

Using a 0.000 g/dL BrAC sample, turn on the ignition. Turn off the ignition. Attempt to restart the ignition without a breath sample in less than 20 seconds—the ignition must not lock. Turn off the ignition. Attempt to restart the ignition without a breath sample between 20 to 25 seconds after turning off the ignition—the ignition must lock. Conduct Test 10 five times.

#### Test 11. High Altitude

This test applies only to BAIDs with a semiconductor-type alcohol sensor. Conduct Test 1b and Test 1c each at pressures of 80 kPa and 110 kPa (600 mmHg and 820 mmHg). Conduct Test 11 five times at each indicated pressure. At indicated pressure levels, for Test 1b, the ignition must remain unlocked; for Test 1c, the ignition must remain locked.

#### Test 12. Cigarette Smoke

Direct a cigarette smoker, who is alcohol-free, to smoke approximately 1/2 of a cigarette. The smoker must wait 1 minute or a period specified by the BAID manufacturer before testing. Conduct Test 12 three times. The ignition must not lock. (A simulator may be used in lieu of a smoker.)

#### Test 13. Acetone

Test the BAID for acetone interference. Conduct Test 1b by adding 230 microliters of acetone\* to the 500 milliliters of .008 g/dL BrAC alcohol simulator solution. Conduct Test 1b three times. The ignition must not lock.

#### Test 14. Emergency Override

This test applies only to BAIDs equipped with an emergency override feature. Follow the BAID manufacturer's instructions to activate the emergency override feature without providing a breath sample. Upon a first

\*The amount of acetone specified is experimentally determined based on water to air partition factor of 365 to 1 at 34 °C to yield an acetone concentration in the air sample of 0.5 mg/liter.

activation, verify that the BAID allows the vehicle to start. Attempt to activate the emergency override feature two additional times without providing a breath sample. Verify that the BAID does not allow the vehicle to start on either of those subsequent attempts. The ignition must not lock on the first attempt, and must lock on both subsequent attempts. All other functions of the BAID should operate normally, including the running retest and data logging.

**Test 15. Radiofrequency Interference/ Electromagnetic Interference**

The Society of Automotive Engineers (SAE) Surface Vehicle Standard J1113 series, Required Function Performance Status, as defined in Surface Vehicle Standard J1113-1 for Class C devices (devices essential to the operation or control of the vehicle), and the International Special Committee on Radio Interference (CISPR), Subcommittee of International Electrotechnical Committee (IEC), specifically CISPR 25, will be used to evaluate BAID electromagnetic immunity and compatibility. The test severity levels are specified below. The tests must be performed while the BAID is in the drive and standby modes.

a. J1113-1 2006-10 General and definitions. Electromagnetic Compatibility Measurement Procedures and Limits for Vehicles, Boats, and Machines (Except Aircraft) (16.6 Hz to 18 GHz).

b. J1113-2 2004-07 Conducted immunity 30 Hz to 250 kHz—Power leads.

Level	Severity (volts, peak to peak)	Status
1	0.15	I.
2	0.50	I.
3	1.0	I.
4	3.0	II.

c. J1113-4 2004-08 Conducted immunity—Bulk Current Injection (BCI) Method.

Level	Severity (milliampere)	Status
1	25 to 60	I.
2	60 to 80	II.
3	80 to 100	III.
4	100	IV.

d. J1113-11 2007-06 Immunity to Conducted Transients on Power Leads.

Pulse (12 v sys)	Level	Severity (volts)	Status
1	1	-25	I.
	2	-50	II.
	3	-75	II.
	4	-100	IV.
2a	1	25	I.
	2	40	II.
	3	50	II.
	4	75	IV.
2b	1	10	I.
	1	-35	I.
	2	-75	II.
3a	3	-112	II.
	4	-150	IV.
	1	25	I.
	2	50	II.
3b	3	75	II.
	4	100	IV.
	1	-4	I.
	2	-6	II.
4	3	-6	II.
	4	-7	IV.

Pulse (12 v sys)	Level	Severity (volts)	Status
5	1	57	IV.

e. J1113-13 2004-11 Part 13: Immunity to Electrostatic Discharge.

Severity	Status
<b>Contact discharge</b>	
0-4 kV	I.
4-8 kV	II.
8 kV	IV.
<b>Air discharge</b>	
0-4 kV	I.
4-15 kV	II.
15 kV	IV.

f. J1113-21 2005-10 Immunity to Electromagnetic Fields, 30 MHz to 18 GHz.

Severity (V/M)	Status
Up to 60	I.
60-80	II.
80-100	III.
100-150	IV.

g. J1113-22 2003-11 Immunity to magnetic fields.

Severity (uT)	Status
40	I.
40-60	II.
50-80	III.
80	IV.

h. IEC CISPR 25 Limits of Radio Disturbance.

**RADIATED DISTURBANCE LIMITS**  
[1 M test distance, 120 kHz bandwidth]

30-75 MHz	75-400 MHz	400-1000 MHz
a: $62 - 25.13 \times \log(F/30)$	$52 + 15.13 \times \log(F/75)$	63
b: $52 - 25.13 \times \log(F/30)$	$42 + 15.13 \times \log(F/75)$	53

a: Broadband, quasi-peak detector.  
b: Narrowband, average detector.  
Limit in dB (uV/M) at frequency F.

**CONDUCTED TRANSIENT EMISSIONS**

Pulse polarity	Maximum pulse amplitude (12 volt system) (V)
Positive	75

**CONDUCTED TRANSIENT EMISSIONS—Continued**

Pulse polarity	Maximum pulse amplitude (12 volt system) (V)
Negative	-100

**LIMITS FOR BROADBAND CONDUCTED DISTURBANCES (MHz)**

	0.15-0.3		0.53-2.0		5.9-6.2		30-54		68-106	
	P	QP	P	QP	P	QP	P	QP	P	QP
a	93	80	79	68	65	52	65	52	49	36

## LIMITS FOR BROADBAND CONDUCTED DISTURBANCES (MHZ)—Continued

	0.15–0.3		0.53–2.0		5.9–6.2		30–54		68–108	
	P	QP	P	QP	P	QP	P	QP	P	QP
b .....	80	67	76	63	62	49	62	49	56	43

a: Power lines, limit in dB (µV).  
 b: Control lines, limit in dB (µA).  
 P: Peak detector.  
 QP: Quasi-Peak detector.

## LIMITS FOR NARROWBAND CONDUCTED DISTURBANCES (MHZ)

	0.15–0.3	0.53–2.0	5.9–6.2	30–54	68–87	76–108
a .....	70	50	45	40	30	36
b .....	80	50	45	40	40	46

a: Power lines, limit in dB (µV).  
 b: Control lines, limit in dB (µA).  
 Limits by peak detection.

## Test 16. Service Interval

Initialize the BAIID to begin the service interval period. After thirty (30) days, the BAIID must prominently indicate that it must be taken to a designated maintenance facility for maintenance and data downloads within 7 days or the ignition will lock and the event will be logged. Over the course of the 7-day lockout countdown, the BAIID must prominently indicate that the BAIID is in need of service, the time remaining until ignition lockout, but the ignition must not lock. At the end of this 7-day lockout countdown, the BAIID must prominently indicate that the BAIID is in need of service and the ignition must lock. Other tests (except Tests 15 and 17) may be performed during this 37-day period.

## Test 17. Data Integrity and Format

Complete all other tests before performing Test 17. Download the data from the data logger and compare it to the data recorded for each test. Disconnect, then reconnect the power to the data logger. Download the data again and compare it to the first data download. No lost or corrupted data is allowed. Check the data format (*i.e.*, date and time of event) to verify conformance with the sample format in Appendix D.

## Appendix A—Submission Procedures for Conformance Testing of Breath Alcohol Ignition Interlock Devices (BAIID)

NHTSA will test Breath Alcohol Ignition Interlock Devices (BAIIDs) at the DOT Volpe National Transportation Systems Center (Volpe Center). Testing of BAIIDs will be subject to the availability of Federal funds. If Federal funds are not available, NHTSA will discontinue testing BAIIDs until funds become available.

Manufacturers that wish to submit a BAIID for testing must apply in writing to the Office of Behavioral Safety Research, NHT-130, NHTSA, 1200 New Jersey Avenue, SE., Washington, DC 20590. Manufacturers must apply separately for each BAIID. NHTSA will test BAIIDs on a first-come, first-served basis. NHTSA will contact manufacturers with a test date and instructions for BAIID delivery to the Volpe Center. Manufacturers should not send devices until NHTSA has scheduled a test date.

When NHTSA has scheduled a test date, the manufacturer must submit one BAIID. If the BAIID is designed with special features, the BAIID must be submitted with instructions explaining how to turn each feature on and off. The manufacturer must also submit the operator's manual (user's guide or instructions to the user), the maintenance manual, quality assurance plan (QAP) (Appendix C), including recalibration and service requirements that are provided to the installation providers with the purchase or lease of the BAIID, self-certification as to the FDA's good manufacturing practices and device labeling requirements, as well as specifications and drawings fully describing the BAIID and its use. Manufacturers seeking confidential treatment for submitted information must follow the procedures set out in 49 CFR part 512.

The manufacturer is responsible for ensuring that the BAIID is operating properly and calibrated prior to the initiation of the test. Once testing begins, the manufacturer will not be allowed access to the BAIID or to the test site.

BAIIDs that are tested by the Volpe Center and determined to conform to the Model Specifications will be listed on a Conforming Products List (CPL). NHTSA will not accept test results from other sources. Except as specifically noted under a test procedure, BAIIDs must conform to the specifications in all 17 tests in order to be listed on the CPL.

Any malfunction of a BAIID resulting in failure to complete any of the required tests satisfactorily will result in a determination that the BAIID does not conform to the Model Specifications. If a BAIID fails any one of the tests, the agency at its own discretion may

stop any further tests. If a BAIID fails to conform to the Model Specifications, NHTSA will notify the manufacturer in writing, and provide the reasons for the failure.

NHTSA will publish and update the CPL periodically in the Federal Register.

## Appendix B—Re-Examination\* of Breath Alcohol Ignition Interlock Devices (BAIID)

\*Re-examination of a BAIID is at the sole discretion of NHTSA and subject to the availability of Federal funds.

## 1. Re-Examination of Nonconforming BAIID

If test results reveal that a BAIID does not meet the Model Specifications, a manufacturer may resubmit the BAIID for re-examination after appropriate corrections have been made to the BAIID. The manufacturer must follow the submission procedures in Appendix A. In addition, the manufacturer must provide written documentation of the changes or corrections that have been made to the BAIID to bring the device into conformance with the Model Specifications.

## 2. Changes to BAIID Listed on the Conforming Products List (CPL)

Manufacturers contemplating changes to a BAIID listed on the CPL (other than modification of the set point) are advised that any change may affect the status of the BAIID on the CPL. The manufacturer should inform NHTSA of the contemplated change(s) to determine whether re-examination of the BAIID is necessary. The manufacturer should submit the following information to NHTSA:

- Model name of the changed device.
- Nature and reason for change.
- Scope of change (*e.g.*, Will existing BAIIDs or BAIIDs in the marketplace be retrofitted? Will the change apply to some users but not others?)
- Will the change affect performance of the BAIID under the Model Specifications? (Precision and accuracy, temperature operations, vibrations, other laboratory readings, etc.)
- How will the change(s) be documented for the benefit of the user? (*e.g.*, Will the

change(s) be documented in service bulletins and/or service manuals? If not, why not?)

- Drawings of the changed BAID.

If NHTSA determines that the changes to the BAID may affect the conformance of the BAID with the Model Specifications, NHTSA will request that the changed BAID be sent for testing. Refusal to provide the changed BAID for testing may result in the removal of the BAID from the CPL.

**3. Re-Examination of BAID Listed on the CPL**

If available information indicates that a BAID on the CPL may not perform in accordance with the Model Specifications, NHTSA may direct the Volpe Center to re-examine the BAID. To assist in this effort, NHTSA may request manufacturers to send another BAID sample for testing. (Refusal to provide another BAID sample may result in the removal of the BAID from the CPL.) Based on the new tests, NHTSA will determine whether the BAID continues to conform to the Model Specifications. If the BAID does not meet the Model Specifications, the BAID will be removed from the CPL.

**Appendix C—Quality Assurance Plan Template**

[Manufacturer name], Quality Assurance Plan for [Interlock name AND Model number] [date]

Under the National Highway Traffic Safety Administration (NHTSA) Breath alcohol ignition interlock testing program, interlocks are evaluated according to the NHTSA Model Specifications for Breath Alcohol Ignition Interlocks (BAIDs). Those models that conform to the Model Specifications are added to the Conforming Products List for Breath Alcohol Ignition Interlocks. This Quality Assurance Plan (QAP) and the operating instructions for the [Interlock name] provide step-by-step instructions for checking the accuracy of the calibration of a BAID and the maintenance of the BAID. (As noted in the Model Specifications, BAIDs must hold calibration for 37 days (30 days + 7 day lockout countdown) and must have a service interval of 37 days (30 days + 7 day lockout countdown).

1. Provide step-by-step instructions for checking the calibration of the BAID. These instructions must include:
  - Recommended calibrating unit(s) (listed on NHTSA's Conforming Products List of Calibrating Units for Breath Alcohol Testers) and instructions for using the calibrating unit(s);

- Breath alcohol concentration to be used in the calibration check(s): 0.02 g/dL BrAC;
- Agreement of the calibration check with the breath alcohol concentration of the calibrating unit: Not greater than ±0.006 BrAC;

- Description of how to verify the accuracy of the BAID reading of BrAC (e.g., from an instrument read out, printout, data logger, etc.);

- Description of actions that must be taken if the BAID fails the calibration check.

2. Provide instructions on downloading the data from the data logger.

3. Provide instructions on how to maintain the BAID (i.e., what must be examined at the 30 day service interval; any functions that require less frequent checks). Such instructions must detail any corrective action to be taken if the BAID fails to perform as well as any events that would require a BAID to be taken out of service and returned to the manufacturer.

4. Provide instructions on how to check for tampering.

5. Other information regarding quality assurance unique to this instrument, if any: Contact information for the BAID manufacturer regarding calibration and maintenance issues:

**Appendix D—Sample Format for Downloaded Data From Data Logger**

Date	Time	Start attempts (engine activity)
<b>Example 1. Acceptable start and drive cycle</b>		
4/21/07	0951	start attempt. sample accepted. BrAC (alcohol absent, e.g., 0.000, 0.008). unlock. ignition keyed. starter active. 0952 engine on. 0958 rolling retest. sample accepted. BrAC (alcohol absent, e.g., 0.000, 0.008). 1032 engine off.
<b>Example 2. Acceptable start but fail rolling re-start</b>		
4/22/07	2316	start attempt. sample accepted. BrAC (alcohol absent, e.g., 0.008). unlock. ignition keyed. starter active. engine on.
	2317	rolling retest.
	2319	BrAC (alcohol present, e.g., 0.025). warning given. engine off.
4/23/07	0047	
<b>Example 3. Push start</b>		
4/23/07	2054	ignition keyed. warning given. starter not active.
	2055	engine on. warning given.
	2120	engine off.
<b>Example 4. Start attempted but alcohol detected. Retry</b>		
4/21/07	1852	start attempt.

Date	Time	Start attempts (engine activity)
	1653 1656	sample accepted. BrAC (alcohol present, e.g., 0.030). lock. warning given. start attempt.
	1657 1702	sample accepted. BrAC (alcohol absent, e.g., 0.015). unlock. ignition keyed. starter active. engine on. rolling retest.
	1850	sample accepted. BrAC (alcohol absent, e.g., 0.010). engine off.
<b>Example 5. Start attempted using filtered sample. Retry</b>		
4/15/07	2016 2205 2206 2352	start attempt. low temp. warning given. start attempt. sample accepted. BrAC (alcohol absent, 0.000). unlock. ignition keyed. starter active. engine on. engine off.
<b>Example 6. Calibration Check</b>		
4/28/07	0900 0903 0926 1032 1045	start attempt. sample accepted. BrAC (alcohol absent, 0.000 or 0.008). unlock. ignition keyed. starter active. engine on. rolling retest. sample accepted. BrAC (alcohol absent, 0.000 or 0.008). engine on. Calibration check.

Issued on: October 1, 2010.

Jeff Michael,  
Associate Administrator for the Office of  
Research and Program Development,  
National Highway Traffic Safety  
Administration.

[FR Doc. 2010-25131 Filed 10-5-10; 8:45 am]  
BILLING CODE 4910-56-P

#### DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety  
Administration

[Docket No. FMCSA-2010-0161]

Qualification of Drivers; Exemption  
Applications; Vision

AGENCY: Federal Motor Carrier Safety  
Administration (FMCSA), DOT.

ACTION: Notice of final disposition.

**SUMMARY:** FMCSA announces its decision to exempt 17 individuals from the vision requirement in the Federal Motor Carrier Safety Regulations (FMCSRs). The exemptions will enable these individuals to operate commercial motor vehicles (CMVs) in interstate commerce without meeting the prescribed vision standard. The Agency has concluded that granting these exemptions will provide a level of safety that is equivalent to, or greater than, the level of safety maintained without the exemptions for these CMV drivers.

**DATES:** The exemptions are effective October 6, 2010. The exemptions expire on October 8, 2012.

**FOR FURTHER INFORMATION CONTACT:** Dr. Mary D. Gunnels, Director, Medical Programs, (202)-366-4001, [fmcsamedical@dot.gov](mailto:fmcsamedical@dot.gov), FMCSA, Department of Transportation, 1200 New Jersey Avenue, SE., Room W64-

224, Washington, DC 20590-0001. Office hours are from 8:30 a.m. to 5 p.m. Monday through Friday, except Federal holidays.

#### SUPPLEMENTARY INFORMATION:

##### Electronic Access

You may see all the comments online through the Federal Document Management System (FDMS) at <http://www.regulations.gov>.

**Docket:** For access to the docket to read background documents or comments, go to <http://www.regulations.gov> at any time or Room W12-140 on the ground level of the West Building, 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The FDMS is available 24 hours each day, 365 days each year. If you want acknowledgment that we received your comments, please include a self-

**FOR FURTHER INFORMATION CONTACT:** Mr. Robert Nevel, Office of National Security Plans room P1-1303, U.S. Department of Transportation, Maritime Administration, 400 Seventh Street SW., Washington, DC 20590. (202) 368-5900.

**SUPPLEMENTARY INFORMATION:** Under the authority of section 708 of the Defense Production Act of 1950 (DPA), as amended (50 U.S.C. app. 2158), MARAD is the sponsor of the Agreement whereby tanker owners and charterers agree with MARAD to make available tankers and tanker space when needed for the national defense. The text of the Agreement was published in the Federal Register on August 25, 1983 (48 FR 38716). All voluntary agreements must be reviewed and approved by the Attorney General every two years. On July 25, 1991, the Attorney General, after consultation with the Chairman of the Federal Trade Commission, made the statutory findings and authorized the renewal of the Agreement for two years.

On August 17, 1991, Public Law 102-69 extended the expiration date of the DPA and amended section 708 of the DPA pertaining to voluntary agreements. The amendments simplify and improve administration of voluntary agreements, and clarify the legal protection provided through the antitrust defense available to participants when developing or carrying out a voluntary agreement or a plan of action. Section 708 was not affected by the expiration of the other provisions of the DPA on March 1, 1992.

MARAD is writing directly to each signatory to the Agreement in order to provide highlights of changes to section 708, as well as an amendment to the company's signed Agreement reflecting that the participant will comply with the statute as changed.

Each company named below has signed the Agreement:

American Heavy Lift Shipping Co., Houston, TX  
 American Maritime Transport, Inc., Tarrytown, NY  
 Amoco Transport Company, Chicago, IL  
 Arco Marine, Inc., Long Beach, CA  
 Bay Tankers, Inc., Englewood Cliffs, NJ  
 Chevron Shipping Company, San Francisco, CA  
 Cove Maritime Companies, Inc., Mobile, AL  
 Exxon Corporation, New York, NY  
 Keystone Shipping Company, Philadelphia, PA  
 Marine Transport Lines, Inc., Secaucus, NJ  
 Oil Shipping and Transportation Company, New York, NY

Mormac Marine Transport, Inc., Stanford, CT  
 OMI Corporation, New York, NY  
 OSC Bulk Ships, Inc., New York, NY  
 Phillips Petroleum Co., Bartlesville, OK  
 Sabine Towing and Transport Co., Inc., Groves, TX  
 Sun Transport, Inc., Aston, PA  
 Texaco, Inc., White Plains, NY  
 West Coast Shipping (Union Oil Company of California), Los Angeles, CA

All other U.S. companies which own, operate, or charter tankers and ocean going tugs and tank barges are invited to participate in the Agreement. Copies of the Agreement and the Application Form will be sent on request.

By order of the Maritime Administration.  
 Department of Transportation.

Dated: March 31, 1992.  
 James E. Seari,  
 Secretary, Maritime Administration.  
 [FR Doc. 92-7871 Filed 4-6-92; 8:45 am]  
 BILLING CODE 4910-01-M

#### National Highway Traffic Safety Administration

[Docket No. 91-07, Notice 2]

#### Model Specifications for Breath Alcohol Ignition Interlock Devices (BAIIDs)

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).  
**ACTION:** Notice.

**SUMMARY:** This notice presents revised model specifications for the performance and testing of breath alcohol ignition interlock devices (BAIIDs). These devices are designed to prevent a driver from starting a car when the driver's breath alcohol content (BrAC) is at or above a set alcohol level. These devices are currently being used in connection with sanctions for Driving While Intoxicated (DWI) in a number of States. Persons required to use BAIIDs are under court supervision. NHTSA published its proposed model specifications for BAIIDs in the Federal Register on April 24, 1991 (56 FR 18857). The model specifications adopted below have been revised in response to comments received about the April 1991 model specifications.

**DATES:** This notice becomes effective on April 7, 1992.

**FOR FURTHER INFORMATION CONTACT:** Dr. James F. Frank, Office of Program Development & Evaluation (NTS-30), National Highway Traffic Safety

Administration, 400 Seventh St. SW., Washington, DC 20590, Telephone: (202) 368-5593.

**SUPPLEMENTARY INFORMATION:** On April 24, 1991 (56 FR 18857), the National Highway Traffic Safety Administration (NHTSA) issued a notice and request for comments on proposed "Model Specifications for Breath Alcohol Ignition Interlock Devices (BAIIDs)." These devices are breath alcohol test instruments designed to allow a vehicle ignition switch to start an engine when a driver's breath alcohol concentration (BrAC) is below an alcohol setpoint; conversely, the devices are designed to prevent a driver from starting a car when the BrAC is at or above the alcohol setpoint. These model specifications were proposed for use by State and local governments.

As explained in the April 1991 notice, a number of States have passed laws authorizing the use of "certified" breath alcohol ignition interlock devices, and the responsibility for developing certification standards and test procedures has fallen to various agencies within these States. Consequently, a number of States and manufacturers of these ignition interlock devices have requested that the Federal Government develop and issue standards for certifying these devices. These requests have been based, at least in part, on the concern that an economic hardship might be placed on manufacturers of these devices if they were faced with having to meet numerous different State standards and test requirements.

NHTSA has considerable experience in the breath alcohol test measurement area. On November 5, 1973, the agency issued standards and test procedures for evidential breath test devices (38 FR 30459), and on August 19, 1975, the agency issued standards and test procedures for calibrating units for breath alcohol testers (40 FR 36167). The agency converted both of these standards to model specifications on December 14, 1984 (49 FR 48854). NHTSA believes that the issuance of model specifications and test procedures for breath alcohol ignition interlock devices would serve to encourage a degree of consistency among the States while at the same time provide sufficient flexibility for States to address their individual needs or legislative requirements. These model specifications and test procedures have been drafted in such a way to enable States to adopt them with minimal effort.

Interested parties were invited to

**Model Specifications for Breath Alcohol Ignition Interlock Devices (BAIID) 57 FR No. 67, p. 11772 through 11787**

submit comments on or before June 24, 1991. Nine comments were received. They included responses from four interested agencies of the state government in California; the City Prosecutor from Phoenix, Arizona; Ms. Angela Joslin of Riverton, Illinois; Mr. S.A. Satya, the president of Autosense International, a BAIID manufacturer; and Dr. Donald Collier and Mr. Richard Freund, both former executives of Guardian Interlock, the other BAIID manufacturer. Dr. Collier and Mr. Freund responded as individuals at the time they wrote their responses, rather than as executives of Guardian Interlock. Four general issues were raised in the comments. They were: (1) The precision/accuracy requirements; (2) the rolling retest requirement; (3) tests at  $-20^{\circ}\text{C}$ . to  $-40^{\circ}\text{C}$ .; and (4) the calibration stability requirement. Some modifications have been made to the model specifications in response to these comments, as will be explained in more detail below. Additionally, a change has been made in the specifications for radio frequency and electromagnetic interference testing. The substance of this change is also summarized below.

(1) *The precision and accuracy requirements.* The comments received raised the question of whether the precision and accuracy requirements in the model specifications should be made less stringent by allowing for  $\pm 0.02\%$  variation rather than a  $\pm 0.01\%$  variation within which 90% of the tests must fall. The three commenters associated with BAIID manufacturers (Satya, Collier and Freund) all recommended a less stringent accuracy requirement, because, they argued, the real purpose of the BAIIDs is to prevent driving at high BACs. They claimed that high precision and accuracy requirements at low BACs would complicate the equipment and cause practical problems in their use, as there might be more false positive cases when used under field conditions. The agency agrees with these commenters that the principal purpose of the BAIID is to prevent a driver from operating a vehicle at illegal BACs, and consequently, agrees that it is appropriate to make the requirements slightly less stringent than initially proposed.

Rather than adopting the commenters' recommendations entirely, the agency has decided to reorganize the model specifications and create a two-tiered requirement in which we distinguish between testing under unstressed and stressed conditions. The stressed tests include any test protocol which imposes

an environmental or use-related challenge on the BAIID, such as extreme temperatures, voltages, vibrations, or frequent usage. Under such stressed conditions, the model specifications, as adopted in this notice, allow for  $\pm 0.02\%$  variation rather than the  $\pm 0.01\%$  variation allowed under unstressed test protocols. Under unstressed conditions, the requirement remains the same as proposed, namely  $\pm 0.01\%$ .

(2) *The Rolling Retest Requirement.* This item in the proposed model specifications attracted more comments than any other. The concerns raised revolved around two issues: Safety and cost for the manufacturer. The proposed specifications provided that rolling retests would be made at a random time within 5 to 30 minutes after the vehicle start and that a failure with the rolling retest would result ONLY in a recording of that failure on the internal recorder at the time of the failure. It would also lock a user out of the vehicle after five days unless the offender takes the vehicle to an installer for inspection within the five (5) day window. NHTSA believes the rolling retest is the only safe and reasonable way of countering the possibility that a substitute breath sample by another person might be used to circumvent the intent of the BAIID. Only the rolling retest appears to provide a method for controlling such illicit assistance curbside, at least until the time that manufacturers develop some more economical method for identifying the individual providing the sample for test.

In this notice, the agency has adopted the original rolling retest requirement without change, but has provided additional text to ensure that readers understand clearly why it is included and that it does not constitute a safety hazard.

(3) *Tests at  $-20^{\circ}\text{C}$ . to  $-40^{\circ}\text{C}$ .* The responses from BAIID manufacturers suggested that the technology could not perform adequately at  $-40^{\circ}\text{C}$ . and that use of the tests at these temperatures would have to be met by some system for warming the vehicle interior and sensor. There appears to have been a misreading of the model specifications, which provide that the manufacturer may disconnect the sensor head from the body of the Ignition Interlock device, so it can be taken to a warmer environment (e.g., indoors) in cold weather conditions. One respondent even suggested that the head can be warmed by being placed inside a coat or jacket against the body. It should be emphasized that the published model specifications do not require that the

equipment operates with an internal temperature of  $-40^{\circ}\text{C}$ . but rather that provisions be made which permit it to operate when the ambient temperature is  $-40^{\circ}\text{C}$ . In other words, the head may be removed and warmed and subsequently put back on the  $-40^{\circ}\text{C}$ . device before the actual test is conducted. For completeness, NHTSA has added two temperature levels for testing ( $-20^{\circ}\text{C}$ . and  $+70^{\circ}\text{C}$ .) in the model specification.

(4) *Calibration Stability Requirement.* Respondents currently or previously associated with BAIID manufacturers objected to the requirement that the devices show the ability to hold calibration 15 days beyond the period set by the manufacturer. Instead, they recommended that the BAIID unit incorporate a circuit which would lock out the motorist if he/she did not bring a unit in for calibration within 7 days of a specified date. The agency agrees and has therefore revised the proposed model specifications accordingly.

Regarding RFI testing, a further agency review suggested the need for refinement of the proposed April 1991 requirement (sections 1.7.S, 1.7.T and 4.7). Based on this review, it became apparent to the agency that the best data regarding possible interference effects would be collected in an actual vehicle environment, rather than in a laboratory. Accordingly, the model specifications adopted here require in-vehicle testing for these RFI tests only. Furthermore, the testing specifications have been limited to cellular telephones (the instrument, if any, most likely to be a source of interference). In addition, greater detail has been included in the specifications to ensure the collection of useful data and to protect the laboratory personnel conducting the tests from excessive exposure to emissions from the transmitting cellular telephone.

NHTSA has also made some additional minor changes in wording and emphasis from the model specifications proposed in April 1991 in response to specific suggestions made by a number of the public commenters.

*Federalism Assessment.* The agency has analyzed this action under the principles and criteria of Executive Order 12812 and has determined that the action does not have any federalism implications that warrant the preparation of a federalism assessment.

In consideration of the foregoing, NHTSA issues the model specifications for breath alcohol ignition interlock devices, as set forth below.

Issued on April 1, 1992.

Michael B. Browalec,  
Associate Administrator, Traffic Safety  
Programs.

## MODEL SPECIFICATIONS FOR BREATH ALCOHOL IGNITION INTERLOCK DEVICES

### Purpose and Scope

The purpose of these specifications is to establish performance criteria and methods of testing for breath alcohol ignition interlock devices (BAIID). BAIIDs are breath alcohol sensing instruments designed to be mounted in an automobile and connected to the ignition key switching system in a way that prevents the vehicle from starting unless the driver first provides a breath sample. These devices contain an instrument to measure the alcohol content of a deep lung breath sample. If the measured breath alcohol concentration (BrAC) is at or above a set level the ignition is locked and the vehicle will not start. These devices are currently being used as a court sanction. Drivers convicted of Driving While Intoxicated (DWI) may be required to use these devices on their car under court supervision. These specifications are intended for use in certification testing of BAIID's used under court supervision.

### Definitions

#### D1 Alcohol

Ethanol; ethyl alcohol ( $C_2H_5OH$ ).

#### D2 BrAC

Breath Alcohol Concentration (BrAC) is expressed in percent weight by volume (% w/v) based upon grams of alcohol per 210 liters of breath in accordance with the Traffic Laws Annotated, Section 11-902.1(a) (Supp. 1983). A BrAC of 0.10% w/v means 0.10 grams of alcohol per 210 liters of breath (similarly, the Blood Alcohol Concentration or BAC associated with a BrAC of .10% w/v means .10 grams of alcohol per 100 milliliters of blood; except for the difference in the referenced volume measure—210 liters of breath vs. 100 ml of blood—the referenced grams of ethanol are identical). Alcohol concentrations in either breath or in air mixtures can be expressed in milligrams of alcohol per liter of air (mg/l); to convert mg/l to units of percent weight by volume, multiply by 0.21.

#### D3 BAIID (Breath Alcohol Ignition Interlock Devices)

These interlock devices are designed to allow a vehicle ignition switch to start the engine when the BrAC test result is below the alcohol setpoint.

while locking the ignition when the breath test result is at or above the alcohol setpoint.

#### D4 Alcohol Setpoint

The Alcohol Setpoint is the Breath Alcohol Concentration at which the BAIID is set to lock the ignition. It should be noted that the alcohol setpoint is the nominal lockpoint at which the BAIID is set at the time of calibration.

Ideally, there should be no occasions when a person with zero BAC is blocked from starting a vehicle engine due to the interlock.

Therefore, to help protect against the response of the alcohol sensor to vapors other than ethyl alcohol, such as tobacco smoke or mouthwash, and the natural production of gases by human subjects, some leeway is necessary at the low end. At the other extreme, a BAC of 0.5% w/v has been shown to produce evidence of behavioral impairment in some individuals, and in some parts of the country (e.g., Colorado and the District of Columbia) 0.05% w/v can be presumptive evidence of impairment and grounds for legal action. The setpoint must be between the limits of .00% and .05%.

With some known exceptions, use of a 0.025% w/v alcohol setpoint should minimize the possibility that users who have not recently ingested alcohol will have trouble starting their engines. A discussion of the rationale for selecting 0.025% can be found in section 4.1. State interlock program developers requiring use of these BAIIDs should be aware that even at BrACs which are lower than many states' mandated "legal limit," some drivers will already have their driving ability impaired.

#### D5 Breath Sample

The breath sample is normal expired human breath containing primarily alveolar air from the deep lung. See section 4.2 for a more detailed discussion.

#### D6 Fail-Safe

When the BAIID device cannot operate properly due to some condition (e.g., improper voltage, temperature exceeding operating range, dead sensor etc.) the BAIID will not permit the vehicle to be started.

#### D7 Tampering and Circumvention

##### D7.1 Tampering

An overt, conscious attempt to physically disable or otherwise disconnect the BAIID from its power source and thereby allow a person with a BrAC above the setpoint to start the engine.

##### D7.2 Circumvention

An overt, conscious attempt to bypass the BAIID whether by providing samples other than the natural unfiltered breath of the driver, or by starting the car without using the ignition switch, or any other act intended to start the vehicle without first taking and passing a breath test, and thus permitting a driver with a BrAC in excess of the alcohol setpoint to start the vehicle.

#### D8 Safety and Utility

##### D8.1 Safety Feature

Any specification related to insuring that the BAIID will prevent a driver with a BrAC above the alcohol setpoint from driving.

##### D8.2 Utility Feature

Any specification related to insuring that the BAIID will function reliably and not interfere with driving by operators whose BrAC's are below the alcohol setpoint.

##### D8.3 Optional Feature

Any specification that is not specifically recommended at this time but may be necessary to include at some future issuance of certification specifications. Non-inclusion at this time is due to lack of evidence that failure to include constitutes a significant problem. Also the optional feature may, if implemented, cause the cost and complexity of the interlock device to rise substantially.

#### D9 Certification Tests

Tests performed to check the compliance of a product with these specifications.

#### D10 Stress Tests

Any testing protocol which imposes on the BAIID an environmental or use-related challenge, such as extreme temperatures, voltages, vibrations, or frequent usage.

#### D11 Filtered Air Samples

Any human breath sample that has intentionally been altered so as to remove alcohol from it.

#### D12 Device

A breath alcohol ignition interlock device (BAIID).

#### D13 False Negative

A breath alcohol concentration determination that incorrectly permits a vehicle to be started when the driver's BrAC is at or above the setpoint.

**D14 False Positive**

A breath alcohol concentration determination that incorrectly prevents the vehicle from being started when the driver's BrAC is below the setpoint.

**MODEL SPECIFICATIONS AND TEST REQUIREMENTS**

**1.0.S/T Safety Specifications (S) and Safety Tests (T)**

**1.1.S Dual Accuracy and Precision Limits (High End)**

The accuracy and precision shall be determined as described in paragraphs 1.1.1.S to 1.1.4.S when tested in accordance with section 1.1.T.

The accuracy specifications for the BAID will be different depending on the test interventions. Two conditions are recognized: unstressed and stressed.

**1.1.1.S Baseline Accuracy in the Unstressed Condition**

Following a calibration, and when tested at neutral ambient air temperature (10-30 °C), all BAIDs shall lock the vehicle ignition 90% of the time when the true alcohol content of the breath sample is 0.01% w/v BrAC (0.01g ETOH/210 liters air) or more above the alcohol setpoint.

**1.1.2.S Accuracy After One or More Stress Tests**

Following any one or more Stress Tests in which the BAID is subjected to conditions as specified in Definition D10, the BAIDs shall lock the vehicle ignition 90% of the time when the true alcohol content of the breath sample is 0.02% w/v BrAC (0.02g ETOH/210 liters air) or more above the alcohol setpoint.

**1.1.3.S Standard Deviation (Precision)**

The accuracy requirement as specified in 1.1.1.S is equivalent to distributions of test results with a mean equal to the alcohol setpoint (e.g. 0.025% w/v), and a standard deviation equal to 0.0078% w/v BrAC. The accuracy requirement specified in 1.1.2.S is equivalent to a distribution of test results with a mean equal to the alcohol setpoint (e.g. 0.025% w/v) and a standard deviation equal to 0.0158%.

Accordingly, under 1.1.1.S, 0.01% w/v BrAC above the alcohol setpoint (90% criterion) is equal to approx. +1.28 standard deviations. Similarly, under 1.1.2.S 0.02% w/v BrAC above the alcohol setpoint (90% criterion) is equal to approx. +1.28 standard deviations. This value of standard deviation, derived from a table of cumulative normal probabilities can be regarded as equivalent to a one-tailed test of significance, and represent the maximum allowable imprecision under

conditions of perfect accuracy. When there is analytic inaccuracy in addition to imprecision, the allowable standard deviation will be lower.

The stable criterion for all test purposes is set as 90% correct test outcomes at .01% w/v above the setpoint for Section 1.1.1.S and 90% correct outcomes for .02% w/v above the setpoint for Section 1.1.2.S.

**1.1.4.S Proportions**

The safety requirement must specify the proportion of tests at BrACs of .01% w/v or .02% w/v above the alcohol setpoint at which the ignition must be locked. The table below shows the 90% criterion for unstressed and post-stress testing.

**TABLE 1.—TEST BRAC LEVEL AT WHICH THE IGNITION MUST BE LOCKED AT LEAST 90% OF THE TIME DEPENDING ON WHETHER TEST IS UNSTRESSED OR STRESSED**

Alcohol setpoint	Test BrAC Level (% w/v)	
	Unstressed	Stressed
0.025% w/v <sup>1</sup>	0.035	0.045

<sup>1</sup> Recommended.

Because the values referenced for allowable error (e.g. 90% criterion) are derived from a standard table of probabilities, values could also be specified for any point along the hypothetical normal distribution with mean equal to the setpoint. For example, testing a 99.5% lock criterion (2.57 standard deviations) for the unstressed and stressed tests (by using 0.045% and 0.055% w/v solutions respectively) would have no practical value because a real test of the criterion would require at least 200 repetitions in order to reliably detect 1 failure. Therefore all testing as specified in 1.1.T is referenced to a 90% lock certainty, requiring, as will be noted below, 20 test repetitions for which there may be no more than 2 failures.

A matrix of safety test requirements as specified in Appendix A shall be required for full certification of an interlock device. Accuracy of thermometers used to monitor simulator temperature and the purity of alcohol used shall be traceable to the National Institute of Standards and Technology (formerly National Bureau of Standards). All test reports must clearly specify the equipment used, the manufacturer, model number and calibration dates.

A qualified testing laboratory, chosen by a state to conduct these certification tests, shall be capable of establishing

their own procedures. For reference, however, Appendix B contains the list of equipment, setup procedures for testing, and a protocol for mixing alcohol test solutions.

**1.1.T Accuracy/Precision Tests (High End)**

Two sets of criteria apply to the test outcome, depending on whether the BAID had recently been subjected to a stress test. Paragraph 1.1.1.T specifies the criteria for the unstressed tests, paragraph 1.1.2.T specifies the criteria for the stress tests.

All tests shall be conducted on two different BAIDs. These will be referred to subsequently as Device A and Device B.

The testing shall be repeated 20 times on device A, and 20 times on device B. Two types of results shall be recorded: pass/fail, and a digital readout. The pass/fail information can be read from the user display on the front of the interlock unit. A three decimal place digital readout of the vapor alcohol concentration senses can be read from the BAID display, if available, otherwise it shall be taken from an externally connected laboratory test instrument that monitors the BAID's evaluation of the alcohol concentration of the introduced sample.

**1.1.1.T Unstressed Accuracy/Precision Test Specifications (High End)**

The baseline accuracy testing is conducted as a measure of the BAID's ability to hold to or exceed a 90% accuracy criterion when a test solution is .01% w/v above the alcohol setpoint. Accuracy testing with this criterion shall be conducted at room temperature and initially precede all others to ensure that the fundamental operation of the BAID is initially adequate under no-stress conditions.

If either BAID fails to lock on more than two occasions in those twenty trials with an alcohol concentration of 0.01% w/v above the setpoint specification, then it has failed the no-stress accuracy test criterion of 90%.

**1.1.2.T Stress Accuracy/Precision Test Specifications (High End)**

This accuracy testing is conducted in conjunction with all subsequent Stress Tests to be specified in following paragraphs. This test protocol is a measure of the BAID's ability to hold to or exceed a 90% accuracy criterion when a test solution is .02% w/v above the alcohol setpoint. This test shall be conducted at whatever temperature is called for by the test protocol utilizing the test criterion.

If either BAID fails to lock on more than two occasions in those twenty days with an alcohol concentration of .02% w/v above the setpoint specification, then it has failed the post-stress accuracy test criterion of 90%.

**2.3 Breath Sampling Requirement**

All BAIDs must require that a minimum of 1.5 liters of breath be introduced through the mouthpiece and run through the instrument before the alcohol content is measured.

Compliance with this requirement can be determined by testing in accordance with paragraph 1.2.T.

**1.2.T Breath Sampling Requirement Tests**

The specification stipulates at least 1.5 liters of air be introduced before sampling the alcohol concentration. To determine that the interlock device is sampling alveolar air, spirometric measurement shall be made on both devices A and B at both the minimum acceptable and maximum acceptable delivery pressures as specified by the manufacturer.

If the sampling head of the interlock device is incapable of being fitted with a spirometer at the outlet to collect and measure all of the vented sample, then this test may be conducted in an air tight laboratory box with a transparent viewing window. In such a case, place the interlock in the box (fitted with a power outlet as needed), connect the output of the simulator to the inlet of the interlock via an air-tight feed line, and install a fitting on the vent port in the wall of the box. Connect the spirometer to the vent port. Measure the volume of air escaping from the vent port as an index of the volume of air introduced into the interlock. Record the volume of air when the sample is accepted by the interlock device.

Alternatively, a plastic bag suitably outfitted may be used in place of the box. The suitability of this alternative shall be verified by using a large (one to three liter) calibration syringe to demonstrate that collected volume equals input volume.

**2.3.1 Post-Stress Testing Protocols**

**1.3.1 Calibration Stability**

All BAIDs must meet the accuracy criteria set in paragraph 1.1.2.S and be tested in accordance with paragraph 1.1.2.T after having been calibrated according to paragraph 1.3.T for a period longer than the period of time specified by the manufacturer in their instructions for certification. Thus, if the manufacturer intends to require their BAIDs to be brought in for maintenance

and calibration every 30 days, 45 days, or 60 days, this period of time plus 7 more days (or 37, 52, or 67 days respectively), would be used to determine whether the BAID met the calibration stability requirement.

**1.3.1.S Lockout After 7 Days Beyond Service Interval**

A BAID must prevent engine ignition if it has not been recalibrated for a period in excess of 7 days beyond the manufacturer's recommended service interval. A warning must precede lockout when the manufacturer's recommended interval has passed.

**1.3.T Calibration Stability Test**

After completing all other tests required under section 1, the BAIDs shall be recalibrated and remain in a fixed location in the testing laboratory for the period of time specified by the manufacturer for regular maintenance and calibration, plus 7 days. The calibration stability testing should proceed under two conditions: alcohol-free and with alcohol present. For nine out of ten test days, the BAIDs shall be run through 10 test cycles per day using a human breath sample known to contain no alcohol. On the tenth test day, ten tests shall be performed with a known concentration of 0.10% w/v ethanol delivered from a simulator.

The calibration stability regimen shall be repeated five days a week during this interval. For example, if a manufacturer's recommended calibration interval is 60 days, this will require approximately 10 weeks (60 + 7 = 67 days) of testing, a total of 500 calibration stability tests. At least 50 of those tests then would be conducted with alcohol. Practically this would involve testing with alcohol once every two weeks.

Before continuing to the next phase of stability testing, the protocol described in section 1.3.1.T should be evaluated.

Following the calibration stability regimen, the BAIDs shall be retested according to the high end accuracy criteria as set forth in 1.1.2.S and the test procedures as set forth in 1.1.2.T. In addition, however, if the BAIDs pass the accuracy/precision tests according to the criterion of 1.1.2.S (90% accuracy with a test solution .02% w/v above the setpoint), then the devices must then be recalibrated and be able to pass according to the criterion of 1.1.1.S (90% accuracy with a test solution .01% w/v above the setpoint).

**1.3.1.T Evaluation of Lockout for Expiration of Service Interval**

In the course of conducting the calibration stability regimen, the BAID

must be shown to prevent ignition if it has not been serviced. Determine that the warning signal alerts the user when the service interval expires. Determine that lockout ensues in 7 days.

Return to 1.3.T to continue with the recalibration phase of testing.

**1.4.S Power**

If the BAID device is designed to be operated from a 12 Volt DC vehicle battery, then it shall meet the accuracy requirements specified in paragraphs 1.1.1.S to 1.1.4.S when operated within the normal range of automotive voltages of 11 to 16 Volts DC, when tested in accordance with paragraph 1.4.T.

**1.4.T Power Test**

If the submitted BAID draws its power from the vehicle battery, then the device shall be subjected to accuracy testing at both the high and low voltages according to the following protocol.

Devices A and B shall be selected and supplied with 11 Volts DC power and then subjected to the test protocol as set forth in section 1.1.2.T for accuracy testing.

Devices A and B shall be selected and supplied with 16 Volts DC power and then subjected to the test protocol as set forth in section 1.1.2.T for accuracy testing.

**1.5.S Temperature**

**1.5.1.S Operating Range**

All BAIDs shall meet the accuracy specifications in paragraphs 1.1.1.S to 1.1.4.S when operated within a temperature range of +25°C to -40°C (+185°F to -40°F) and when tested in accordance with paragraph 1.5.T for their ability to operate properly at low and at high temperatures.

**1.5.2.S Note on Extreme Operating Range**

The BAID manufacturer may choose to meet the specifications for temperature extremes (-40°C and +85°C) by having the alcohol sensing unit be removable (e.g., so that it may be kept warm (cool) when the vehicle is expected to be subject to extremely cold (hot) temperatures).

If the removable alcohol test unit is not removed, and as a result is exposed to temperatures outside the manufacturer's recommended operating range, then the BAID shall fail-safe or the ignition be rendered inoperable.

**1.5.T Temperature Tests**

The following tests cover both the challenging and extremely challenging operating ranges. See section 2.3.T for warm-up utility tests that can be

conducted in tandem with these temperature stress tests.

**1.5.1.1.T -40°C.**

Devices A and B shall be temperature stabilized for a period of 1 hr. in an environmental chamber set at -40°C. After the period of temperature stability elapses, the BAIDs shall be subjected to an accuracy regimen as specified in section 1.1.2.T.

**1.5.1.2.T -20°C.**

Devices A and B shall be temperature stabilized for a period of 1 hr. in an environmental chamber set at -20°C. After the period of temperature stability elapses, the BAIDs shall be subjected to an accuracy regimen as specified in section 1.1.2.T.

**1.5.1.3.T +70°C.**

Devices A and B shall be temperature stabilized for a period of 1 hr. in an environmental chamber set at +70°C. After the period of temperature stability elapses, the BAIDs shall be subjected to an accuracy regimen as specified in section 1.1.2.T.

**1.5.1.4.T +85°C.**

Devices A and B shall be temperature stabilized for a period of 1 hr. in an environmental chamber set at +85°C. After the period of temperature stability elapses, the BAIDs shall be subjected to an accuracy regimen as specified in section 1.1.2.T.

**1.5.2.T Extreme Conditions Beyond Manufacturers Claimed Accuracy**

If the BAID manufacturer has chosen to meet the specifications for temperature extremes (-40°C and +85°C) by having the alcohol sensing unit be removable (e.g., so that it may be kept warm (cool) when the vehicle is expected to be subject to extremely cold (hot) temperatures), then the fixed or permanently installed portion of the BAID only shall be exposed to the extreme temperature specification. Then, when the sampling head is reconnected to the device, the BAID must meet the accuracy requirements as specified in paragraphs 1.1.1.S to 1.1.4.S when tested in accordance with paragraph 1.5.T. This testing shall be conducted promptly following reconnect so as not to allow the sensor to become equilibrated to the chamber temperature. Warming of the sensor is acceptable between trials if necessary to meet the specification.

If the sampling head is not removable and the temperature range within which the BAID is claimed to operate properly is narrower than that provided for in paragraph 1.5.1.S then at the extreme

temperatures outside the range specified by the manufacturer, the BAID shall fail-safe.

**1.6.S Vibration**

All BAIDs shall meet the accuracy requirements specified in paragraph 1.1.1.S to 1.1.4.S after they have been subjected to the vibration tests in accordance with paragraph 1.6.T.

**1.6.T Vibration Stability Test**

These tests are performed to determine BAID fitness for the automotive environment. If the BAID consists of more than one module, it will be necessary to shake each module separately. Before testing inspect housing thoroughly for cracks.

**1.6.1.T Test 1**

Subject device A to simple harmonic motion having an amplitude of .38 mm (0.015 in.) [total excursion of 0.76 mm (0.030 in.)] applied initially at a frequency of 10 Hz and increased at a uniform rate to 30 Hz in 2.5 minutes, then decreased at a uniform rate to 10 Hz in 2.5 minutes.

**1.6.2.T Test 2**

Subject device B to simple harmonic motion having an amplitude of 0.19 mm (0.0075 in.) [total excursion of 0.38 mm (0.015 in.)] applied initially at a frequency of 30 Hz and increased at a uniform rate to 60 Hz in 2.5 minutes, then decreased at a uniform rate to 30 Hz in 2.5 minutes.

**1.6.3.T Variations**

Perform the vibration tests as described in paragraphs 1.6.1.T and 1.6.2.T in each of three directions, namely in the directions parallel to both axes of the base and perpendicular to the plane of the base.

**1.6.4.T**

Repeat the test protocol for accuracy as specified in 1.1.2.T for both BAIDs. The BAID shall meet the accuracy requirements as specified in section 1.1.2.S.

**1.6.5.T**

After the vibration regimen, inspect both BAIDs to identify any cracks in the exterior casing and failures in the tamper-proof points of interface with the automotive environment. If cracks or failures are identified, then the test unit fails. The manufacturer shall be allowed to submit subsequent devices for this test phase, but no more than 1 of 6 shall be allowed to fail this phase.

**1.7.S Radio Frequency (Electromagnetic) Interference (RFI)**

Radio frequencies generated inside the vehicle have the potential to interrupt signal processing, or sample evaluation at the BAID.

The BAID shall be accurate according to the specifications set forth in Section 1.1.2.S, and tested according to Section 1.1.2.T when exposed to radio frequencies generated by common in-vehicle appliances, such as CB radios or cellular telephones.

It should be noted that full characterization of RFI susceptibility of BAID is beyond the scope of this effort. The following protocol shall be implemented as a limited test for whether intentionally generated RFI interferes with BAID performance.

**1.7.T RFI Testing Protocol**

In an actual vehicle in which a BAID is installed, the sampling head of the BAID shall be connected to the alcohol-air delivery tube in preparation for testing according to the specifications as set forth in Section 1.1.2.T. The sampling head of the BAID shall be positioned so that it is adjacent to (within 2 cm), but not touching, any BAID electronics processing unit which is mounted inside the vehicle on or under the dashboard.

The antenna of a transportable cellular telephone with an output power of not less than 3 watts shall be placed within 5 cm of the sampling head/box of the BAID. A telephone number shall have been keyed into the cellular telephone. The alcohol sample shall be introduced into the BAID concurrent with the issuance of a "send" signal to the telephone.

During each cycle while the BAID is evaluating the alcohol sample, and while the telephone continues to transmit, the antenna of the telephone shall be positioned in one of three orthogonal (i.e. 90°) orientations in relation to the BAID. All three orthogonal orientations shall be tested.

In order to ensure the safety of the individual conducting the tests, these tests shall not be run more than six (6) minutes in any given one hour period (see American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz, approved by the American National Standards Institute on July 30, 1982). Additionally, it is an appropriate rule of thumb for the test lab personnel to make sure their eyes (as well as the rest of their bodies) are kept at a distance of at least 30 cms. from the transmitting antenna during the tests.

The performance of the BAID shall be evaluated according to the criteria of 1.2.1. The performance of the data recorder shall be determined to accurately reflect the test results found on the user display of the BAID.

**1.8 Tampering and Circumvention**

The BAID must provide a method to detect two classes of misuse, tampering and circumvention.

**1.8.1 Tampering**

The BAID must provide a secure method to detect and store the time and date of tampering attempts made by the following means:

**1.8.1.1.S**

- Interrupting the power source of the interlock device causing it to fail, or to fail to record ignition activity.

**1.8.1.2.S**

- Vehicle engine starts *not* preceded by a passed interlock test, except during the free restart interval as provided for in 1.8.5.

Information about unauthorized starts that are stored internally shall not be lost when the interlock device is disconnected from the vehicle battery.

**1.8.2 Circumvention**

The BAID must be able to detect, or protect against, illegitimate air samples introduced to the sampling head. Illegitimate samples may be delivered from the following sources:

**1.8.2.1.S**

- Non-human delivery sources of air samples such as balloons or compressed air containers,

**1.8.2.2.S**

- Human sources of air samples that are altered through filtration or other means after leaving the mouth,

**1.8.2.3.S**

- Human sources of air samples provided by anyone other than the driver of the vehicle. This specification does not imply the BAID be able to detect a unique breath signature, but to preclude curbside assistance to an impaired driver, the BAID shall require that a second breath test be required once a vehicle has been underway for at least 5 minutes but not more than 30 minutes.

The BAID must detect or minimize these types of circumvention in accordance with the criteria as specified in paragraph 1.8.1.

**1.8.T Tampering and Circumvention Tests**

**1.8.1.T Tampering**

**1.8.1.1.T Power loss**

The BAID shall be able to register any external (non-sealed) loss of power. Any attempt to disconnect the BAID from the vehicle in which it is installed shall be recorded electronically. To conduct this test disconnect external 12 Volt DC power source to the Device A or B and determine that there is a record of power loss noted by the interlock device. This may be noted on a memory chip, or by another indicator which can be detected by the service technician.

**1.8.1.2.T Circuit tampering**

The BAID shall be able to register any engine start (whether or not the ignition switch is turned ON) which occurs without passing the BrAC test. This test will require use of an installed BAID. To conduct this test, it will be necessary to "hotwire" the engine. The procedure for doing this will vary with the type of engine. One example is to attach one end of a wire to the primary side of the ignition coil (coming from the distributor) and the other end to the vehicle battery's positive pole. Then short the appropriate terminals on the starter relay or starter motor to determine if the vehicle is able to be started. If the vehicle starts, shut it off and then repeat this test 3 times on either device A or B.

An interlock device ought to be capable of either preventing a vehicle from being successfully hotwired, or be capable of registering all such successfully completed bypasses of the interlock device. If the installed device fails to achieve either of these criteria and permits circuit tampering, then it fails this test phase.

**1.8.2.T Circumvention**

**1.8.2.1.T Non-human samples**

The BAID shall be capable of detecting or failing 80% of the non-human breath samples introduced through one of the following:

- Mylar balloon.
- Rubber (toy) balloon.
- Compressed air (aerosol can or other source).

The balloons must be large enough to deliver the minimum volume requirement, 1.5 liters. The non-human circumvention test battery shall be conducted in accordance with section 1.1.T, except the sample introduced shall be alcohol-free air introduced through the three air sources identified above. These sources are exemplary and not

necessarily the best or only sources suitable for this class of circumvention.

The devices A and B shall each be subjected to this circumvention testing. The criterion of failure in this case is more than two passed tests out of a series of 10. This is not a test of accuracy of alcohol detection, but a test of how well the BAID can detect air samples that deviate from a normal breath sample.

**1.8.2.2.T Filtered samples**

BAIDs shall be capable of detecting or failing 80% of the filtered samples when filtered by either dry or wet filtering systems such as the following:

- Commercial cat litter, silica gel.
- Heated water.
- Approx. 4 ft. or 1.5 meter long Tygon Tube (3/8 "i.d.).

The filtered sample circumvention test battery shall be conducted on both devices A and B in accordance with section 1.1.2.T. In this case all elements of the testing procedure as specified in 1.1.2.T, shall be identical except that the sample shall be filtered by interposing two different filtering systems, in separate tests, between the sample simulator and the interlock device. The dry filter can be composed of any tube packed with a suitable absorbent material, such as those identified above, but in doing so, the technician must keep in mind the constraints of absorbent capacity and the relationship between packing and blowability. For example a 2 1/2 inch piece of cardboard tubing (1/2 inch diameter) might be used. It might be packed with 12 ounces of commercial cat litter, each end of the tube being stopped with cotton wadding. The wet filter shall ideally consist of water heated to 34 °C in a capped cup fitted with inlet and outlet hoses. The filter device shall be made of common materials that are widely available. For example, a 6 oz. styrofoam coffee cup might be used with 1/4 inch rubber or tygon tubing used for inlet and outlet hoses. In the case of use of the 4 ft. long Tygon tubing as a filter, the tube shall be chilled to 0 °C and attached securely to the BAID mouthpiece before attempting to provide a sample.

**1.8.2.3.T Rolling retest to thwart curbside assistance**

After passing the test allowing the engine to start, the BAID shall require a second test within a randomly variable interval ranging from 5 to 30 minutes. During the rolling retest, the retest setpoint shall be .02% w/v higher than the startup setpoint to preclude a false positive test result.

In order to alert the driver that a retest is to be required, a 3 minute warning light and/or tone shall come on. The driver would then have 3 minutes to retest. If the engine is intentionally or accidentally shutdown after the 3 min. warning but before retesting, the retest lock shall not be reset. Retesting takes priority over free restarts (see sect. 1.9). Test that the free restart is not operative when the BAID is awaiting a rolling retest sample.

The consequences of a failure to take the retest, shall be threefold. First, the refusal to perform a rolling retest shall be flagged and recorded on the data recorder. Second, the BAID shall warn the driver by a unique auditory or visual cue that the vehicle ignition will enter a lockout condition within a period of 5 days, and that the assignee shall report to the BAID program monitor promptly. Third, the lockout shall proceed within 5 days.

A retest that is taken as required and subsequently failed shall result in an alert condition that is flagged on the data recorder. The BAID assignee shall be signalled that the BAID program monitor must be notified promptly of the violation, the automatic lockout shall proceed.

The test protocol shall determine that both devices A and B are capable of performing according to this specification.

#### 1.9.S Sample-free restart

After a stall, a sample-free restart shall be possible for 2 minutes. This free restart does not apply, however, if the BAID was awaiting a rolling retest that was not delivered.

#### 1.9.T Sample Free Restart Test

The BAID shall permit a free-restart (no breath sample required) for  $2 \pm .25$  min. Conduct six tests with an alcohol-free sample from either a human or non-human source. Three tests at 1.5 min, three at 2.5 min. Use devices A and B. The BAIDs shall allow a start without requiring a sample for all of the first three tests, and fail to start without a sample on the subsequent three tests.

#### 1.10.S Data Recording

An active monitoring program will require vehicle use information. A BAID shall have the capability to record the nature of such use and the test outcomes during the stipulated period. The following kinds of information shall be recorded by the BAID:

- Efforts to disable the unit.
- Date of vehicle use.
- Time of vehicle use.
- Pass/fail records.

- BrAC levels.
- Starting and stopping of vehicle engine.
- Service reminders issued (date).
- Date service performed.

#### 1.10.T Data Recording Test

Perform test according to manufacturer's instructions. Determine whether readout is satisfactory and understandable. Test to be certain that the BAID memory remains intact for multiple printouts if desired, or until the service technician chooses to reset/erase the memory.

#### 2.0.S/T Utility Specifications (S) and Utility Tests (T)

##### 2.1.S Dual Accuracy and Precision Limits (Low End)

The accuracy and precision for the utility specification shall be determined in a manner parallel to that described in paragraphs 1.1.1.S to 1.1.4.S except for the test solution of alcohol to be used in the simulator. In the case of the utility specification, as with the safety specification, there is a dual criterion depending on the existence of stress test protocols. No stress test protocols are specifically provided for here in conjunction with utility specifications, since these are not strictly highway safety question. Certifying authorities wishing to conduct stress-involved protocols for the utility specification could conduct them in a parallel fashion to those provided for and beginning in Section 1.3. Nonetheless, a parallel dual set of specifications is proposed here for States wishing to conduct such testing.

##### 2.1.1.S Baseline Accuracy in the Unstressed Condition

All BAIDs shall allow the ignition to remain locked no more than 10% of the time when the true alcohol content of the breath sample is 0.01% or more below the alcohol setpoint and testing is being conducted under ambient temperatures in the range of 10-30 °C in a newly recalibrated BAID.

##### 2.1.2.S Accuracy under Stress conditions

Under conditions of stress testing, the BAIDs shall allow the ignition to remain locked no more than 10% of the time when the true alcohol content of the breath sample is 0.02% w/v or more below the alcohol setpoint.

##### 2.1.3.S Standard Deviation (Precision)

Precision guidelines shall be parallel to those described in Section 1.1.3.S.

##### 2.1.4.S Proportions

This is to specify the proportion of tests at BrACs of .01% w/v and .02% w/v

below the alcohol setpoint at which the ignition must be unlocked. The table below shows the 90% criteria of accuracy for unstressed and post-stress testing.

TABLE 2.—TEST BRAC LEVEL AT WHICH THE IGNITION MUST BE UNLOCKED AT LEAST 90% OF THE TIME DEPENDING ON WHETHER TEST IS UNSTRESSED OR STRESSED

Alcohol setpoint	Test BrAC Level (percent w/v)	
	Unstressed	Stressed
0.025% w/v <sup>1</sup>	0.015	0.005

<sup>1</sup> Recommended.

#### 2.1.T Accuracy Testing of Utility Specification (Dual criteria)

All utility tests shall be conducted on the two BAIDs, devices A and B. Two sets of specifications can apply, but only one of these specifications, the baseline or unstressed protocol (2.1.1.T) is specifically utilized.

##### 2.1.1.T Utility Accuracy Testing of Unstressed BAID

The accuracy testing is conducted as a measure of the BAID's ability to hold to or exceed a 90% accuracy criterion when a test solution is .01% w/v below the alcohol setpoint. This test shall be conducted at room temperature and precede all other utility tests to ensure that the fundamental operation of the BAID is adequate under no-stress conditions after recent recalibration.

The test shall be repeated 20 times on device A, and 20 times of device B. Two types of results shall be recorded, pass/fail, and a digital readout representing the BAID's evaluation of the alcohol concentration of the introduced sample.

If either BAID locks more than twice in those twenty trials then it has failed the no-stress accuracy utility test criterion of 90%.

A failure to meet the accuracy criterion shall disqualify the BAID.

##### 2.1.2.T Utility Accuracy Testing of Stressed BAIDs

If the certifying authority chooses to conduct tests of the utility specification for stressed BAIDs, it is recommended that a protocol be followed that parallels those proposed for Stressed BAIDs beginning in Section 1.3, and that the criteria for evaluation be .02% w/v below the setpoint for 90% unlocked accuracy.

**2.2.S Clearance Rates**

The BAID shall permit a test within 3 minutes of a previous test at a BrAC  $\leq 0.05\%$  w/v.

**2.2.T Clearance Rate Test**

The BAID shall reset to zero and be ready for a retest within 3 minutes of a previous test at BrAC  $\leq 0.05\%$  w/v.

Test adherence to this criterion by introducing a  $0.05\%$  w/v sample into devices A and B, activate a timer upon receipt of the test result, record the test result. Record the elapsed time before the BAID indicates a "ready" condition. Repeat this three times for each BAID.

**2.3.S Warm Up**

The BAID shall be ready for operation within 5 minutes of being turned on at  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ).

**2.3.T Warm Up Test**

The warm up period during which the BAID heats the sensing head shall require no more than 5 min at  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ).

This test can be conducted as part of the environmental chamber tests specified in section 1.5. After stabilization in the environmental chamber at  $-20^{\circ}\text{C}$  for 4 hr, activate timer concurrent with activation of the BAID. Record the time required before receiving a "ready" condition.

**2.4.S User's Display**

The BAID shall provide certain types of informational feedback to the driver. These messages include: BAID readiness for sample, test outcome, and warning messages.

**2.4.T User Display Tests****2.4.1.T Operational Modes**

Indicators must be plainly visible or clearly audible to the user denoting the following:

- Unit is ON.
- Unit is Ready for Test.
- Unit has Received Acceptable Sample.

**2.4.2.T Outcome**

Unit must plainly indicate the test results with minimum message of:

- Pass or Fail.
- 2.4.3.T Warnings**
- Unit must be Serviced and Calibrated Soon.

**2.5.S Temperature Package**

To reach conformance with temperatures below  $-20^{\circ}\text{C}$  or above  $70^{\circ}\text{C}$ , the manufacturer may make available a mechanism or procedure that can achieve the warm-up (cool-down) needs. This can be accomplished

via removal of the sampling head from the vehicle for bringing inside the home, or via provision of a heating jacket, or other procedures.

**2.5.T Low Temperature Package Tests**

Evaluate manufacturers' proposed procedure for temperatures as low as  $-40^{\circ}\text{C}$ .

**2.6.S Altitude**

The manufacturer shall place a notice in the BAID manual and on the device noting that the alcohol sensing unit is more sensitive to ethanol at higher altitudes, and that attempts to start at altitudes higher than that for which the BAID is calibrated could result in a lockout even when the BrAC is lower than the alcohol setpoint.

**2.6.T Altitude Test**

The BAID must provide some written notice to the user of the possibility of a lockout at higher altitude if it is unable to maintain accuracy to ground elevations up to 2.5 km.

**3.1.S/T Optional Features Specifications (S) and Optional Features Tests (T)****3.1.S Optional BrAC Display**

Knowledge of the relation between drinking and BrAC can be a useful educational tool for motivated users. Therefore it is suggested that states give consideration to whether a BAID give a BrAC readout to the user—in addition to a mere pass/fail indication—after a test.

**3.1.T Optional BrAC Display**

Evaluate the adequacy of the display indicator which informs the user of the BrAC test result.

**3.2.S Optional Sample Acceptability Criteria at Inlet**

To improve circumvention protection, sample evaluation criteria as specified in 3.2.1.S and/or 3.2.2.S may be required. These criteria are noted as optional at this time, but may be necessary in order to eliminate the most commonly identified methods of circumvention. Further discussion can be found in Sec. 6.2.

**3.2.1.S Optional Temperature Window of Sample**

Imposing a criterion requiring the sample to fall in a range between  $32\text{--}48^{\circ}\text{C}$  will improve rejection of bogus samples at neutral ambient temperatures. Other criteria may need to apply, however, when air temperatures fall outside the neutral range.

**3.2.2.S Optional Minimal Pressure of Sample**

Filtered samples may suffer pressures losses. A minimal pressure requirement of 12 inches of water will help screen out filtered samples.

**3.2.T Optional Sample Acceptability Criteria Test**

These optional features, if adopted, will have been tested in tandem with the circumvention test protocols in paragraphs 1.6.2.T. If the acceptability criteria are incorporated into the design of the BAID, it is expected that fewer bogus air samples will have resulted in a pass condition.

**3.3.S Optional Smoke Protection**

Tobacco smoke is known to produce false positive results on semiconductor type interlock devices. Smoke from burning fields, a common seasonal event in some rural areas, may similarly be a source of error. Protection of the sampling head from ambient smoke conditions may be necessary under some conditions.

**3.3.T Optional Smoke Protection Test**

To evaluate the potential of airborne smoke to interfere with the accurate sensing of alcohol, perform testing according to paragraph 1.1.T and/or 2.1.T (depending on the testing authority's interest in safety or utility concerns), in a chamber filled with smoke from burning vegetal substances or similar conditions.

**3.4.S Optional Dust Protection**

Fine dust can cause problems with electronic equipment by forming conductive bridges. However, of even greater concern with the interlock device is the ability of fine dust to absorb vapors. This is a specification that may be of concern in arid regions, or where there will be BAIDs installed in construction vehicles. States subject to dust conditions may want to require some kind of a housing that protects the BAID's sampling head from exposure to powdery dust. Dust protection is incorporated in the Australian Standards of BAIDs.

**3.4.T Optional Dust Protection Test**

If a test for dust protection is required by a state, the certification authority may want to follow the clearly specified test procedure in the Society of Automotive Engineers Recommended Environmental Practices For Electronic Equipment Design—J1211, page 20.122, Sect. 4.5.

### 3.3.S Optional CB Radio Alert Condition

Under conditions of a failure to take the required rolling retest, or a failure to pass a rolling retest (as provided for in paragraph 1.8.2.3.T), a signal could be transmitted over a restricted CB channel that can be monitored by the police which alerts nearby cruisers that an impaired driver is operating a motor vehicle. This optional feature can be regarded as support for the anti-circumvention feature as described in paragraphs 1.8.2.3.S and 1.8.2.3.T.

### 3.5.T Optional Alert Conditions Test

No test protocol is proposed.

### 4.0 Commentary on Safety Specifications

These specifications have been divided into safety and utility specifications. This distinction has been made in the Definitions Section D8. Safety issues are by far the more important and the majority of the testing is devoted to insuring the BAIDs perform as expected under conditions of normal field use. It is expected that normal field use will involve a wide range of driving and outdoor conditions, as well as having a minimum of 5% of users trying to circumvent or tamper with the BAID in order to drive while impaired.

The ethanol sensing technology that has been adapted to the automotive environment for BAID devices is mostly based on the Tagucci semiconductor device. The semiconductor devices are not as specific or stable as evidential field use breath testers. However, the purpose of the BAID is not to accurately measure in mg/ml the BAC of a driver, but to prevent the person with a high BAC from operating a motor vehicle. For this reason, the specification has allowed greater leeway in the accuracy test criteria, but has also included a protocol for circumvention protection. In the associated technical report strong recommendations are made for a central authority within each State to maintain authoritative programmatic control of the BAID option.

#### 4.1 Accuracy

With respect to accuracy, these specifications established a range of acceptable performance, especially under so-called "stress" conditions such as temperature extremes, vibration, power variability, etc. For this reason a "double standard" is proposed which is conditional on the recent stress exposure of a test unit. The reasoning for this is as follows.

First, a newly recalibrated BAID that is not subjected to stress tests ought to be held to a higher standard than one which has been so subjected. Field experience with the installed units using semiconductor technology has shown that there is considerable average error (in the range up to 0.015% w/v) following 60 days of routine field use of a BAID.

These specifications do not provide for accuracy testing under compound stresses, such as low temperature with low power at high altitude. Rather than proposing tests for compound stresses to accuracy here, the requirement for such tests should rest with the certifying authorities of the States who can best determine their unique situation evaluation requirements. Clearly, northern Rocky Mountain States would be more interested in combined high altitude and low temperature tests than would States in the southeast. Similarly, many questions have not been researched which may prove significant. For example, would a BAID calibrated for use at high elevation be able to meet the accuracy specification when tested at the coldest temperatures at sea level? These questions are too specific for inclusion in national guidelines, but may be important regionally.

When measuring accuracy and precision of any instrument it should be understood that all measuring devices have a certain natural amount of dispersion of scores around a mean (average) true value. Because of this fluctuation, the setpoint of the interlock device needs to be clearly specified in a way that accommodates this natural variability. In this specification, the worst acceptable deviation under conditions of perfect accuracy have been identified. This allows for inaccuracy and imprecision to trade-off as long as the overall probability of error is lower than the constant specified.

The proposed specifications for interlock devices ostensibly acknowledge three lock points:

- the alcohol setpoint (the nominal lock),
- the virtual lock (90% certainty),
- the near absolute lock (99.5% certainty).

The alcohol setpoint is defined as the interlock device-measured BrAC value at which the ignition will lock.<sup>1</sup> That is, the alcohol setpoint is the BrAC value at which the interlock is set. Due to the inherent variability in these measuring devices, this nominal lockpoint will be the mean of a distribution of true blood or breath alcohol concentration values

<sup>1</sup> This standard recommends that .025% w/v be chosen as the setpoint.

as determined by evidentiary BrAC equipment. Interlock imprecision is the deviation from that value. The higher the precision of the interlock, the smaller will be the dispersion of true BrAC values around the stipulated alcohol setpoint.

The virtual lock point will be the actual, or true BrAC above which the vehicle must fail to start 90% of the time. The difference between the setpoint and virtual lock values will be a gray area which reflects both imprecision and inaccuracy. The guideline specifies that there should be a maximum permissible standard deviation from the setpoint equal to 0.007% w/v BrAC under conditions of no-stress. Following stress protocols, the maximum permissible standard deviation under conditions of perfect accuracy if equal to .0156% w/v.

The third type of lockpoint is the near absolute lock point and is of theoretical interest only because many hundreds of repetitions would be needed to test it. The near absolute lockpoint is equivalent to +2.57 standard deviations in a normally distributed sample of trials where 99.5%, practically all, start attempts must fail. In the unstressed condition, this would be .02% w/v above the setpoint and .04% w/v above the setpoint in the stressed conditions. The implication of this is that for devices which are tested against the specification (even with its most lax accuracy standard), a person with a BAC equal to .55% w/v—still well below the legal limit of most States—would almost certainly be locked out.

Since the condition of virtual lock is defined operationally as 1.28 standard deviations above the alcohol setpoint, and the absolute lockpoint is 2.57 standard deviations above the setpoint, a brief explanation of standard deviation (sd) is relevant.

**Standard Deviation**—The standard deviation is a statistical measure of dispersion of a group of scores. It is also referred to as "sd." or "s." The standard deviation is the most common way to express fluctuation around a mean value. For example, repeated measurements with precise instruments result in a much smaller standard deviation than do repeated measures done on imprecise instruments. In the extreme case, if a BrAC measuring device correctly reads .020% w/v for all samples evaluated from a .020% test solution, the mean of the sample is .020%, and the standard deviation is zero.

The standard deviation is the square root of the average deviation of all scores from the mean. Most scientific, financial and programmable calculators

have a key dedicated to the calculation of the standard deviation. However, it can be hand calculated from the following formula.

$$\sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}}$$

The symbol  $\Sigma$  means to sum up. That is, square all the raw values ( $x$ ) and sum up those squares (e.g.,  $\Sigma x^2$ ). Second, sum up all of the raw values and then square that number (e.g.,  $(\Sigma x)^2$ ), and then divide that result by  $n$ . Then subtract the second value from the first value. Divide the answer by  $n-1$ . The result is the variance. To calculate the standard deviation, take the square root of the variance.

**Example**—The following 10 raw BrAC values have a mean of 0.0224, and a standard deviation of 0.0016.

.023	.022
.024	.025
.020	.020
.022	.023
.022	.023

If the nominal lock is set at .025% w/v, on average 9 of 10 times a vehicle ought to be able to start when the true BrAC is .015%, and fail to start when true BrAC is .035%. Because of the instrument limitations, and because there is little evidence that drivers with a BrAC under .01% increase the risk of highway accidents, a nominal ignition lock less than .02% w/v is not warranted.

The State of California has allowed for a lockpoint at 0.03% w/v, the State of New York has specified a lockpoint of 0.02% w/v. The nominal setpoint in this specification is 0.025% w/v. The value 0.025% w/v is midway between 0 and 0.05% w/v, values which are arguably the extremes under which a vehicle always ought to start and never start, respectively. The true performance of the interlock devices will be somewhere between those extremes. However, because the first generation of BAIDs are not up to the evidential standards for BrAC testing it would be unwise to demand feats of great precision and accuracy from them. The most important consideration in a successful interlock program is the ability of the BAID to prevent a high BAC person from operating a vehicle, and minimize problems with lawful use of the vehicle, by the offender or family members. There are many reasons why such a wide band of acceptable performance should be adopted at this time. Among these reasons are the following:

- The BAID will operate in environments with extreme variations, many which will be hostile to electronic sensing equipment.

- The BAID will not be inspected or calibrated for up to two months even though receiving multiple daily usage.

- BAID certification studies under controlled laboratory conditions have identified errors in excess of 0.015% under modest stress conditions.

- BAID semiconductor devices are non-specific detectors of ethanol and can respond to cigarette smoke, various mouthwashes, some endogenously produced human compounds, and probably many things that haven't been identified as yet.

Having provided for a lenient specification with this first issuance of model specifications, it is expected that as the  $t$  be emphasized that precision and accuracy, while important, are less important than circumvention and tampering protection.

#### 4.2 Breath or Blood Alcohol Estimation and Sample Requirements

The acronym BAC often refers to both blood alcohol concentration and breath alcohol concentration. In this document, breath alcohol concentration is designated as BrAC. Because alcohol (specifically ethanol:  $C_2H_5OH$ ) possesses a high degree of solubility, it is capable of passing readily through biological membranes—such as the cells lining the blood capillaries and lungs—either as a liquid or as a vapor. The first concern in sampling the breath as a way to draw inferences about the blood concentration of alcohol is to be sure that the air sample is drawn from a region of the lungs where the alcohol vapor is in equilibrium with the blood concentration. This requires that the air come from deep within the lungs, so-called alveolar air, or deep lung air. Air from the upper lungs such as the bronchi contains less alcohol than deep, alveolar air.

Virtually all evidential BrAC measurement devices have blowing pressure and/or duration requirements intended to insure a deep lung sample. The purpose of this is to assure that the breath sample is in equilibrium with the circulating blood. Because of the gradual absorption of alcohol and the mixing action of the blood, the ethanol is equally distributed through the bloodstream.

The average vital capacity (exhalable air volume) of healthy adult male human lungs is approximately 4.5 liters of air, and approximately 0.5 liters is exchanged with each breath. The average woman's capacity and normal

breath volumes are slightly lower, but the range of human vital capacities varies from 2.8 to 6 liters of air. To insure that the breath sample is alveolar air, the interlock device must require that a minimum of 1.5 liters of air be exhaled before sampling the air for alcohol content. This quantity is selected as a compromise.

#### 4.3 Calibration Stability

The stability specification is added to assure that the performance criteria as noted in the accuracy specification (sec. 1.1.5) can be maintained during the normal duration that the interlock devices will be in use. Some types of breath sensing devices are inherently more stable than others and the stipulated period of stability will help to assure that a user's BAID will not deviate from the specification during the inter-service interval. This is deemed necessary because considerable drift is possible in the current generation of BAIDs after repeated use over time.

#### 4.4 Power

The power specification was added to insure that BAIDs are not prone to allowing a higher proportion of passed tests when the DC power to the BAID varies within the normal automotive starting system's range of weak or undercharged to overcharged battery voltage conditions. The range stipulated in the specification (sec. 1.4.5) is based on the Society of Automotive Engineer Recommended Practice, Report of the Electronics Systems Committee, definition of the normal range of supply voltages in the automotive environment.

#### 4.5 Temperature

The use of the electronic devices in extreme temperatures can pose a challenge to the capability of an instrument to hold to specifications of accuracy. Therefore, ambient temperatures that are apt to be encountered during a visit to any part of the U.S. should ideally be tested. For example, a resident of a warm southern state may have occasion to travel north in the winter, so when state authorities specify standards they should take into account environmental extremes not encountered inside their own state borders. In extreme temperature situations, the automobile can become a survival tool, so it is important that the interlock be capable of allowing a start under conditions of severe heat and cold when a driver has a permissible BrAC.

One special recommendation is noted in the guidelines for low temperatures. Some cities in Alaska and the north central states (especially, MN, ND, MI,

and MT) have *normal* January low temperature equal to or below the  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) specification, record cold mornings have been as low as  $-40^{\circ}\text{C}/\text{F}$ . Appropriately many northern states, and the Province of Alberta, have set  $-40^{\circ}\text{C}$  as the lower test limit, while other states have set  $-20^{\circ}\text{C}$  as the minimum test specification.

Given the reality of such cold temperatures, the specification as proposed here is  $-40^{\circ}\text{C}$ , but the difference between  $-20^{\circ}$  and  $-40^{\circ}$  can place extreme demands on any electronic device, particularly one designed to sample alcohol vapor concentrations. For this reason, Section 1.5.2.S stipulates that manufacturers may make available some kind of provision, such as a prewarming device, that allows the interlock to be brought up to a warmer temperature before the driver attempts to use the BAID. Manufacturers may also consider providing for a removable sensor head that can be stored in a warmer environment overnight. It is recommended that colder states *insist* on the manufacturers making some provision for cold weather. It should be noted that the SAE Recommended Practices for Electronic Equipment states that "thermal factors are probably the most pervasive environmental hazard to automotive electronic equipment." It identifies the normal vehicle interior heat range as  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ . This specification adopts the SAE range as the recommended range, while offering alternative strategies for compensating for these temperature extremes. Both real world use and testing should also accommodate the physical difficulties of measuring a vapor under such extreme conditions.

An interesting compromise solution to this trade-off between temperature and accuracy was rendered by Alberta which stipulated that if a BAID was unable to meet the accuracy requirement at  $40^{\circ}\text{C}$  below zero when the samples tested ranged from .01 to .05% w/v ethanol, then the BAID must be able to lockout 100% of 30 further trials when an ethanol sample concentration is increased to .06% for retest. This embodies an approach to interlock specifications similar to the one outlined here. That is, the specific accuracy of the BAID, while important, is less critical than the ability of the BAID to prevent the severely impaired person (e.g. above .08% BrAC) from operating a motor vehicle.

The specific design of the low temperature *fail-safe* mechanism can be left to the discretion of manufacturer.

One example, however, is a temperature-sensitive switch that cuts out the ignition circuit when the sampling head temperature is below the operating range of the BAID.

#### 4.6 Vibration

Vibration is common in all automobiles, and the BAID ought to be capable of performing after specifiable vibrational exposure. The standard specification for evidentiary breath testers is repeated here as a minimum vibration specification.

#### 4.7 Radio Frequency and Electromagnetic Interference

The proliferation of electronic gadgetry installed inside vehicles in recent years is large and some may have the potential to emit electrical fields which could alter interlock signal processing. This potential problem was identified in 1982 when a few older evidential field breath test units operating in the vicinity of police communications equipment were found to have been disrupted.

The environment of the police cruiser, with its communications equipment, may be an atypical one for the vast majority of interlock users. However, the possibility remains that electromagnetic fields associated with typical cellular telephones or CB radios may contribute to error or malfunction of the BAID.

The test procedures identified here are designed to assess whether the most commonly used in-vehicle appliances are going to alter the operation of the interlock.

#### 4.8 Tampering and Circumvention

At the current state of development of interlock devices, tampering and circumvention protection is not fully developed. Much of the protection is based more on ensuring the inconvenience of tampering and circumvention rather than the impossibility of it. The highly motivated user generally can, with preplanning, override the standard protection schemes.

##### 4.8.1 Tampering

The tampering protection is designed to prevent easy entry and alteration of the interlock devices, hot-wiring of vehicles, or other non-standard start efforts that seek to preclude a breath test as part of the ordinary startup.

The largest BAID manufacturer uses a tamper seal on sensitive parts of the BAID. This tamper seal is a type of sealing tape which apparently cannot be removed without destroying it or making it evident to the service person that

entry was attempted. It may be, however, that such tape that could be duplicated and find its way onto an underground market. Conceivably there would be some value to producing a unique tape could not be easily reproduced. There is really no evidence that such a thing occurs now, and therefore it is premature to propose it in the specifications. Nonetheless, it may be of interest at some point.

##### 4.8.2 Circumvention

The requirements for circumvention protection must acknowledge trade-offs between allowing unimpaired drivers to start their vehicles and preventing impaired drivers from doing so. Given the infancy of the technology, a balance of false negatives and false positives<sup>2</sup> needs to be struck that realistically accomplishes the intended purpose of the interlock devices for the majority of users. With that stipulation, the specifications note that 80% of the major known means of circumvention be locked out.

Human breath has an exit temperature close to  $34^{\circ}\text{C}$  ( $93^{\circ}\text{F}$ ), and is completely saturated with water. The range of pressures of exhaled air ranges up to about 30 inches of water. These and other characteristics of exhaled breath might at some point be usefully applied as restrictions placed on a sample to require that it fall within some range of acceptable elements of a breath signature so as to minimize circumvention from non-human sources. The specification as currently written is not ideal and should be made more stringent as the industry and the technology mature. The optional features as specified in 3.2.S, and discussed in 6.2 address this problem.

Filtration systems are capable of removing alcohol vapors from breath samples. Most filtering systems, however, also remove water vapor, change the temperature or pressure or otherwise change the human breath signature. These changes could be recorded as indices of attempts to use a filter to circumvent the BAIDs.

The requirement of a rolling retest is directed toward preventing two types of offenses:

- Allowing a pedestrian, or other non-occupant of the moving vehicle, to give the initial breath sample to start the vehicle

<sup>2</sup> It should be noted that a false negative test is one which incorrectly allows the driver to start the car when the BAC equals or exceeds the setpoint. Conversely, a false positive test is one which prevents an engine start when a driver's BAC is legitimately below the alcohol setpoint.

Preventing vehicle use by someone whose BrAC is still in an ascending phase

In this specification, the rolling retest setpoint criterion is recommended to be .02% w/v higher than the startup setpoint. This is done to reduce the basis for a measurement error claim because of the likely gravity of the consequent sanctions for a failed rolling retest, such as loss of driving privileges for an extended period of time.

It needs to be emphasized again, however, that when a rolling retest is failed there are no immediate sanctions proposed such as flashing lights or horns or other distractions. And therefore there are no threats to the safety of the driver or other motorists resulting from this test protocol. The consequence of failing or failing to take a required rolling retest are all delayed and only involve an auditory or visual cue to the driver. This cue signals the requirement that the user report immediately (within days) to the BAID program manager and the service technician. The requirement of actually taking a rolling retest would be no more disruptive than routine in-car driving activities such as adjusting an air conditioner or tuning a radio dial. The drivers eyes need not be taken from the roadway.

For a further discussion of rolling retest see paragraph 6.5.

#### Free Restarts

The re-test limits were necessary in order to make provisions for mechanical or BrAC-related failures. When vehicles stall, particularly in traffic, or because of faulty mechanical or electrical systems, a quick restart should be available. A driver should not be penalized for having a malfunctioning vehicle. The grace period for restarts should be limited to 2 minutes—adequate time for a restart.

#### 4.10 Data Recorder

A record of vehicle use and interlock test results are believed to be critical to accurate monitoring programs. When such monitoring programs are in place, and when they depend upon the durability and accuracy of a vehicle-use report such as one that can be provided from a memory chip internal to the interlock device, then provisions should be made for preserving the integrity of the data record upon loss of vehicle battery power. To achieve this result may require that the memory chip be provided with continuous internal power from a small battery, one not accessible without breaking a sealed compartment. In this way, a severely compliant user would be unable to all evidence of misuse from the

data record in exchange for what could easily be interpreted as an honest power loss due to a dead battery (in devices that draw power from the vehicle battery). Without some sealed power circuit to the memory, the record would be lost. This is not necessarily the best solution, just one approach.

#### 4.10.1 Recording Efforts to Disable Unit

Interlock units should alert the service technician to tampering attempts through some mechanism that is immediately detectable at the calibration check. Once a tampering attempt is discovered, the technician should examine the unit and all the critical wiring junctions. The attempt, and other pertinent evidence of tampering, should be submitted to court personnel on the appropriate forms.

#### 4.10.2 Recording Vehicle Use

In order for court personnel to effectively monitor the appropriate use of the interlock, a hard-copy report generated by the unit at the time of calibration should contain items of information as noted in the specification.

##### 4.10.2.1 Date

A record of the date demonstrates that the unit is being used by the client. Reports that show a consecutive number of days with no test taken should signal court personnel of an irregularity. The concern to be addressed is the possibility of a client driving a non-interlock equipped vehicle.

##### 4.10.2.2 Time of Day

A record of the time of day along with the date shows the total number of tests taken on any given day and how many tests were taken in a row. This information is useful for evaluating client compliance. For example, a few failed tests with high BrAC followed within a few minutes by a pass could be evidence of circumvention. It is important for program monitors to have some kind of procedure, such as an algorithm that can read the data record, or simply to have BAID recorders that can flag such occurrences. In the event that multiple tests are taken within a short period of time, the probation officer may need to question the client.

##### 4.10.2.3 Pass Fail

A record of pass and fail attempts can provide a relatively accurate record of alcohol use and compliance. A record with no or few fail attempts could have several meanings, but a test with many fail attempts should be of concern to court personnel. If a client is expected to abstain from drinking, then the test

results may be used as a confrontation tool.

#### 4.10.2.4 BrAC Level

BrAC level documentation may be of interest to the probation officer or the alcohol counselor for examining the consumption pattern of the driver. A significant number of failed attempts combined with elevated BrACs demonstrates that the client is not meeting program goals. Many DWI programs for offenders require abstinence, so this information may be used in conjunction with self-reports, and may possibly be used as a means of confronting the client with their behavior.

#### 4.10.2.5 Start and Stop

A record of start and stop times, and perhaps a record of miles traveled would allow for court personnel to observe if the vehicle had actually been driven when a test was successfully completed. Thus, if a client stopped at a bar to drink and left the vehicle idling, a lengthy trip with no miles driven would be recorded. Such a situation should "flag" court personnel to a possible circumvention attempt.

#### 4.10.2.6 Service Reminder

It is recommended that the unit itself have the capability to warn the client of an upcoming calibration check. Such a provision has been stated previously in paragraph 2.4.3.T. A combination of a warning light and/or audible sound during the power-up sequence would be sufficient.

### 5.0 Commentary on Utility Specifications

#### 5.1 Accuracy

The accuracy specification for utility specifications is important for the convenient operation of the interlock device. In all likelihood, a BAID that easily passes the accuracy safety specification (high end) will also pass without difficulty the accuracy utility specification (low end). Nevertheless, the acceptability of an interlock program may be damaged if too many legitimate users with legal BrACs are prevented from driving. Similarly there are certain climatic or personal safety occasions when any lockout of a zero BrAC driver would be unacceptable. Therefore, this may be of concern to the certifying authority.

Several of the States and/or Provinces have included in their standards a requirement to test for the contaminating influences of things such as mouthwash, coffee, tobacco breath, unburned hydrocarbons, and breath

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minis. Some of these items are mentioned as complaints among users of the interlock devices in the California Pilot Program, also some of the State and Provincial testing programs have identified false positives particularly with mouthwashes, and tobacco smoke. The possible influence of these substances should not be regarded as a significant concern, however, when minor precautions are taken. While the influence of such substances on BrAC can be real when introduced in a concentrated, atypical fashion, their influence under normal use conditions should not be a serious concern. Since it is the driver who is inconvenienced by use of such interfering substances, it is in the driver's interest to avoid situations which give rise unnecessarily to false positives.

The type of alcohol-sensing technology used in a BAID will influence the specificity of measurement. A passive fuel-cell device held in an engine exhaust stream measures about .01% w/v. The semiconductor technology is less specific, and may read higher. The ability of BAIDs to correctly detect and reject non-ethanol contaminants is adequate but not perfect. It is for these reasons that the alcohol setpoint recommended for adoption not be set below .025% w/v.

On another matter, acetone, an exhalable product of starvation, diabetic ketosis, and a few other medical conditions, has a history of being cited as a source of false positive readings on breath-test devices for alcohol. These too, however, are well-known by forensic specialists as unlikely sources of error for fuel cell and infrared technologies.

### 5.2 Clearance Rates

The interlock devices should be promptly clear of residual breath alcohol after a failed start attempt. The BAID should reset to zero and be ready for a retest within 3 minutes providing the BrAC from the previous test was less than or equal to 0.05% w/v. This stipulation is added because a very high reading due to either high true BrAC, or high mouth alcohol, would place an unreasonable burden on the BAID possibly requiring the addition of a more costly purge blower. The added time that might be required to re-test a person with a BrAC in excess of .05% w/v ranks low in priority of concerns.

### 5.3 Warm-Up

The breath sample must be evaluated in a fairly constant environment, therefore some time must be allowed for the sampling head to stabilize.

### 5.4 User Display

As with all electronic devices that must interface with a human, the thoughtful presentation of information can mean the difference between nervous confusion and easy acceptance. In the case of the interlock device, certain pieces of information must be made crystal-clear to the user. As noted in the utility specification, these are: When to blow, when to wait, when to start the vehicle, when an extended lockout condition occurs, when to seek service. These basic functions should be clearly evident to a minimally-trained user.

### 5.5 Temperature Package

The specification of acceptable temperature extremes is a case where some compromises need to be made. The specification stipulates  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ . The range is regarded as the normative range for automobile exposure by the SAE, but forty degrees below zero is not conducive to vapor measurement, and there has been concern expressed that uncommonly high temperatures would require inclusion of costly circuit protections. These extremes are special conditions but they are also apt to occur.

Certification evaluation procedures should be designed around not only device compliance to the specification, but also the possibility of device's exposure to different problems, such as power and/or physical damage through mishandling. For example, at the low end, if a manufacturer allows a sampling head to be brought inside on chilly nights, there ought to be some provision made to ensure that it is safe from impact damage should it be dropped or mishandled.

The vehicle battery could conceivably be used as a source of power for a heating appliance, but this may impose extreme current demands upon batteries that must turn an engine at temperatures below  $-20^{\circ}\text{C}$ . An external portable power source of some kind might be a solution to this problem.

### 5.6 Altitude

In 1974 it was demonstrated that when a fixed volume of breath is obtained and analyzed at some ambient pressure, alcohol concentration is independent of barometric pressure. However, most of the current BAIDs make use of a semiconductor sensor where the sensitivity to alcohol is a function of the oxygen concentration, and oxygen *does* decrease as altitude increases. As a result, as altitude goes up (and oxygen concentration goes down), measured BrAC increases.

Failure to meet a utility specification, however, is not a safety-related problem, but for residents of much of non-coastal western U.S. it could be a source of some inconvenience. Two alternatives may be worthy of consideration.

On one hand, the manufacturer could conceivably adjust the basal sensitivity of the BAID so that residents of cities above 5,000 feet, such as Salt Lake City, Denver, Flagstaff, Santa Fe etc. are able to start their vehicles without problems. Alternatively, states with high country may want to consider adopting an alcohol setpoint less restrictive than the minimal, such as .03% w/v, so that false positive problems are minimized from the beginning.

### 6.0 Commentary on Optional Features

#### 6.1 BrAC Display

The manufacturer or the state's own information provided to the user ought to instruct the user on the meaning of BrAC values and the likely relation between quantity of alcohol consumed, BrAC, and the average decay time for a BrAC curve.

Inclusion of such information may well provide an educational service to the user/offender about the relationship between drinks consumed, time since drinking and BrAC.

#### 6.2 Sample Acceptability Criteria

In a NHTSA Technical Report (DOT HS 807 333) issued November 1988, three BAID manufacturers had their products evaluated at the Transportation Systems Center in Cambridge, MA. In general it was found that the device which requires a temperature criterion be met was most successful in preventing a pass condition following the introduction of air samples from non-human sources; the device which required a minimum pressure requirement be met was most successful in preventing a pass condition following the introduction of filtered samples.

An ideal unit might require a unique breath signature from each stipulated user, however, the costs of such technology could be prohibitive at this time. Nevertheless, a standard which provides for the breath physical characteristics, or other aspects of the stipulated users, could greatly reduce the attractiveness of circumvention strategies which are now generally quite easy to employ.

Protection from tampering and circumvention is the most challenging and potentially the most costly aspect of an interlock device.

**6.3. Smoke**

Tobacco smoke, or some constituents of tobacco smoke, increase the proportion of false positives detected by semiconductor type alcohol measuring devices. Other sources of smoke may well do likewise, and in the presence of high smoke environments, programs may be affected by this interference. States which have seasonal smoke from burning fields may want to adopt this element of certification testing.

**6.4. Dust**

Dust is a theoretical source of false negatives, the kind of error that might allow an elevated BrAC to go undetected due to absorption of the alcohol by the dust. Dust is incorporated in the Australian Standard and the certification tests there for invehicle alcohol devices require 5 hrs. exposure to dust. States which are prone to dust devils or dust storms may want to consider inclusion of a dust testing protocol in their standards.

**6.5. Alert Conditions**

The rolling retest has been adopted as countermeasure for two different types of circumvention as described in paragraph 3.8.2.

A subject of long discussion has been the proper consequences for a failure

under conditions of a failed rolling retest. If an impaired driver is identified during a rolling retest there are few safe alternatives that would remove the driver from the road. These alternatives fall into the following general categories

- Alert the police and other drivers sharing the road via a conspicuous signal (lights, horns, etc.) This alternative was considered and rejected as a safety hazard.

- Alert the police via covert transmitted signal. This alternative is good from a safety perspective, but might at this time be difficult from a cost or programmatic perspective.

- Merely warn the driver at the time of the infraction with a unique auditory or visual cue, but upon failure prevent further use of the vehicle after a safe period (e.g., 5 days) has passed. This is the only practical alternative at this time.

Most efforts to warn the public at the time of a failed test using installed equipment such as lights and/or horns would add new safety hazards. The wiring of an additional less alarming signal (e.g., a single light source with a unique characteristic) that would be specific to a failed interlock test may be desirable but would add to costs to the BAID and require public education costs as well.

If this class of circumvention were deemed prevalent enough to warrant the expense of a surveillance system, it may be that a low cost CB transmitter signal could be designed that would serve an alerting function. A specific signal, possibly one that sweeps across several frequencies, could alert nearby police cruisers or truckers. Alternatively, citizens could provide location and direction to police which, if capable of responding, could investigate.

One of the pervasive problems faced by interlock manufacturers is to design a device that finds a compromise between sophistication and affordability. The main problem of program evaluators is to honestly evaluate a BAID program as it exists, not a program that may someday exist.

At this early phase in the development of BAID technology, if the marriage of the device and the program to monitor the device is not thoughtfully conceived and controlled, the future of the technology may be forestalled, and the possibility of a technical monitoring approach to alcohol-involved highway safety risks abruptly ended. The specification will need to evolve to a more ideal state if the BAID devices and monitoring programs of today can be shown to warrant such additional development.

## APPENDIX A

## Certification Test Summary

Section	Test description	BAID	Comment/purpose
1.1.1.T	Accuracy Tests for Safety Specification—Unstressed	A, B	Unstressed criterion is 90% accuracy at .01% w/v above setpoint; 20 tests, ≥ 18 must lock.
1.1.2.T	Accuracy Tests for Safety Specification—Stressed	A, B	Stressed criterion is 90% accuracy at .02% w/v above setpoint; 20 tests, ≥ 18 must lock.
1.2.T	Breath Sampling	A, B	Minimum sample of 1.5 L.
1.3.T	Calibration-Stability	A, B	Shall be last test in the series, use daily for duration up to 10 weeks. Test according to § 1.1.2.T at end, then recalibrate and test with § 1.1.1.T.
1.3.1.T	Lockout Evaluation	A, B	BAID must lockout if not serviced by 7 days after recommended service interval.
1.4.T	Power	A, B	11 and 18 VDC test followed by § 1.1.2.T.
1.5.1.T	Temperature Ranges	A, B	Test according to § 1.1.2.T at -40 °C, -20 °C, +70 °C, +85 °C.
1.5.2.T	Temperature Extremes, -40 °C and +85 °C	A, B	Test for manufacturer recommended exceptions to meeting the specification in extreme conditions.
1.6.1.T	Vibration 1	A	10 to 30 to 10 Hz, 5 min., .76mm displacement.
1.6.2.T	Vibration 2	B	30 to 60 to 30 Hz, 5 min., .38mm displacement.
1.6.3.T	Vibration 3	A, B	As above, 3 directions.
1.6.4.T	Vibration 4	A, B	Test by § 1.1.2.T.
1.6.5.T	Post shake inspection	A, B	Search for damage.

## APPENDIX A—Continued

Section	Test description	BAIID	Comment/purpose
1.7.T	RFI/EMI	A, B	5 cm from in-vehicle appliance, test with § 1.1.2.T.
1.8.1.1.T	Tampering/Power loss	A, B	Test for interrupt detection.
1.8.1.2.T	Tampering/Circuit	A or B	Test for hotwire or push start detection ability on an installed device.
1.8.2.1.T	Circumvention/Non-human sample	A, B	80% correct criterion, test with § 1.1.2.T.
1.8.2.2.T	Circumvention/Filtered samples	A, B	80% correct criterion, test with § 1.1.2.T.
1.8.2.3.T	Circumvention/Rolling Retest	A or B	Test to determine retest conditions fulfill criteria of 1) retest interval, 2) failed lockout in 5 days.
1.9.T	Sample free restart	A, B	Test internal timer.
1.10.T	Data recorder	A, B	Evaluate output.
2.1.1.T	Accuracy/Precision for Utility Specification—Unstressed	A, B	Basic criterion is 90% correct pass for .01% w/v below setpoint; 20 tests, 18 or more must not lock.
2.1.2.T	Stressed Utility Tests	n/a	No tests proposed, if needed recommend .02% below setpoint at 90% accuracy criterion.
2.2.T	Clearance Rate Test	A, B	Reset time after .05%w/v.
2.3.T	Warm Up Test	A, B	Time to ready at -20 °C, also see test § 1.5.1.T.
2.4.1.T	Display readability	A/B	Note.
2.4.2.T	Display user feedback	A/B	Note.
2.4.3.T	Display warnings	A/B	Note.
2.5.T	Low temperature provisions	A/B	Determine that a provision is made for extremes if criteria of § 1.1.T not met -40 °C.
2.6.T	Altitude	A/B	Warn user.
3.1.T	BrAC readout	A/B	Optional.
3.2.T	Sample acceptability	A,B	Optional.
3.3.T	Smoke	A,B	Optional.
3.4.T	Dust	A,B	Optional.
3.5.T	Alert Conditions	A,B	Optional.

Appendix B  
Equipment List

1. *Simulators*, such as National Draeger Mark IIA or comparable, must be used with care to avoid problems due to condensation in transfer lines and to prevent overpressure effects. They shall not be exposed to temperatures below about 20°C or above 34°C except for momentary use. Guidelines for preparation of alcohol solutions are available from the National Safety Council's Committee on Alcohol and Other Drugs, 444 North Michigan Avenue, Chicago, Illinois 60611.

2. *Thermometers* must be traceable to the National Institute of Standards and Technology (NIST). The thermometer used for checking the simulator shall be readable to 0.1°C.

3. *Alcohol*, ethanol, shall be U.S.P. reagent quality absolute or NIST Standard Reference Material.

4. *Temperature Chamber*, such as Thermotron FM35 CHM, may be walk-in type of bench top type.

5. *Shake Table* must be capable of vibrating load of about 4.5 kg (10 lb) through the specified schedule. It shall be programmable.

6. *DC power supply*, such as Hewlett Packard 6023 A or comparable, must be able to deliver the range of automotive voltages specified.

7. *Air syringes*, one 1L and one 3L for one class of spirometric measures.

8. *Spirometer*, approximately 9L capacity.

9. *Leak-tight box*, for collecting vented air, shall be large enough to accommodate BAIID and be fitted with suitable connections for spirometer, mouthpiece, and power to BAIID. Similarly outfitted plastic bag may be used if satisfactory seal and operation can be demonstrated using the air syringe and spirometer.

10. *Evidential breath tester*, such as CMI Intoxilyzer (infrared) and Lion Alcometer SD-2 (fuel cell). Both types may be desirable since the peak accuracy ranges differ.

11. *Hoses*, flexible, various diameters.

12. *Glassware*, class A volumetric for preparation of alcohol solutions.

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Ninth Meeting of the Motor Vehicle  
Safety Research Advisory Committee

AGENCY: National Highway Traffic  
Administration (NHTSA), DOT.

ACTION: Meeting announcement.

**SUMMARY:** This notice announces the ninth meeting of the Motor Vehicle Safety Research Advisory Committee (MVSRAAC). The Committee was established in accordance with the provisions of the Federal Advisory Committee Act to obtain independent advice on motor vehicle safety research. At this meeting the Committee will discuss trauma data linkage with the