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STANDARDIZED VOCABULARY

STANDARDIZED BEST PRACTICE RECOMMENDATIONS

AIIPA

ASSOCIATION OF IGNITION INTERLOCK PROGRAM ADMINISTRATORS

AIIPA STANDARDIZED VOCABULARY

The National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT), issued revised Model Specifications for Breath Alcohol Ignition Interlock Devices (BAIIDs) on May 8, 2013 (with an effective date of May 8, 2014). This document includes a list of terms intended for the use in conformance testing of BAIIDs.

AIIPA recognizes that many states have more than just one BAIID manufacturer approved for use. Each company has a list of terms that, while meaning the same thing, are labeled differently. This can lead to confusion for program personnel. In October 2013, AIIPA invited representatives from all BAIID manufacturers to a meeting to discuss the creation of a standardized vocabulary.

As a result of that meeting, the following terms were identified and defined. This document will continue to evolve as different challenges arise and updates to technology occur. The following is a list of terms AIIPA recommends be adopted and utilized by all states.

Accepted Breath Sample.** A breath sample fulfilling set requirements for volume, flow, exhalation time, and other human breath sample characteristics.

Note: The acceptance of a breath sample is independent from the alcohol concentration.

Accuracy. The confirmation of a device's calibration.

Alcohol.* Ethanol or ethyl alcohol (C_2H_5OH).

Alcohol Set Point.* Breath Alcohol Concentration (BrAC) at which a BAIID is set to prevent a vehicle from starting.

Blocking State.** State in which the BAIID inhibits the starting and/or operation of the vehicle.

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.

Breath Alcohol Ignition Interlock Device (BAIID).* 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.

Note: This device is commonly referred to as an alcohol interlock or ignition interlock. In the cases of hybrid or electric vehicles the device allows the driver to operator the vehicle.

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

Breath Test.** Providing a breath sample to a BAIID.

Calibration. The process of testing and adjusting a device to ensure accuracy by using a wet bath device or dry gas standard as defined by the current NHTSA Model Specifications for Calibration Units.

Calibration Interval.** The time period between calibrations during which the BAIID fulfills the stability requirements for the measurement of the breath alcohol concentration.

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

Circumvention. To bypass the correct operation of a BAIID by starting the vehicle, by any means, without first providing a breath test.

Note: Commonly referred to as bypass, illegal start, or untested engine run.

Configuration Profile. The manufacturer or manufacturer representative's declaration regarding the setting of programmable features of the BAIID.

Confirmatory Test. A breath test in response to circumvention.

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

Initial Test.** A breath test provided before the vehicle is started.

Input Voltage. The voltage obtained from the electric power source of the vehicle for operation of the BAIID.

Instrument Modification. The act or instance of altering any aspect of a BAIID model.

Interlock Data Logger.* A device within a BAIID that records all events, dates, and times during the period of installation and use of a BAIID.

Note: This includes all components of the BAIID: handset, relay, camera, etc.

Manufacturer.** A person or organization responsible for the design, construction, and/or production of the BAIID.

Manufacturer Representative. An individual designated by the manufacturer as a contact for the program administrator in a state or jurisdiction.

Mouthpiece.** A part through which the breath sample is delivered into the BAIID.

Not-blocking State.** State in which the vehicle can be started.

Override Lockout. Method of overriding a lockout condition by providing a breath sample.

Override Start. Method of starting a vehicle without providing a breath sample.

Permanent Lockout. A condition where the device will not accept a breath test until serviced as defined by the state or jurisdiction.

Ready for Test.** Indication that the operating parameters of the BAIID are met.

Recall. Response of the BAIID due to a service requirement of the device or an action of the driver which requires service of the BAIID or downloading of the data memory.

Residual Mouth Alcohol. Alcohol found in the oral cavity that dissipates over a short period of time.

Note: Commonly referred to as a false positive.

Restart Period.** The time interval after the car is switched off during which the vehicle may be started again without the delivery of another breath test.

Note: Commonly known as stall protection.

Retest.* A breath test that is required after the initial engine start-up breath test and while the engine is running.

Note: Commonly referred to as a rolling, random, or running retest.

Service Interval.* The time period established by the state or jurisdiction that a BAIID may be used without maintenance or data download. If the device is not serviced within this period, warnings are provided and the device will prevent further operation.

Service Center Provider. The entity designated by the manufacturer to provide services to include, but not be limited to, installation, monitoring, maintenance, and removal of the BAIID.

Service Reminder.** Notice by the BAIID to remind the driver of a service requirement.

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

Start Period. ** Time interval after an accepted breath sample with an alcohol concentration below the breath alcohol concentration limit has been delivered, during which the vehicle may be started.

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

Technician. An individual authorized and trained to perform services related to the BAIID.

Temporary Lockout. A condition where the device will not accept a breath test for a set amount of time as defined by the state or jurisdiction.

Vendor. An entity designated by the manufacturer to conduct business on behalf of the manufacturer in a state or jurisdiction.

Violation. Non-compliance with a law, regulation, or rule as defined by a state or jurisdiction.

Violation Re-set. A feature of the device in which a service reminder is activated in response to a violation.

*** Definitions standardized by the National Highway Traffic Safety Administration (NHTSA).**

**** Definitions standardized by the European Committee for Electrotechnical Standardization (CENELEC)**

Updated by Laura Bailey, AIIPA President

AIIPA STANDARDIZED BEST PRACTICE RECOMMENDATIONS

AIIPA recognizes that BAIID programs differ from one State or jurisdiction to another for a variety of reasons. Differences are found in regard to legal issues (statutory language, rules and regulations, case law, etc.) and scientific issues (instrumentation, documentation, certification, testing, etc.). NHTSA states that the Model Specifications are intended to apply to the performance of BAIID units, not to the manner in which States and local jurisdictions conduct their programs.

The purpose of this document is to outline standardized best practice recommendations that states can adopt so that testing and performance of BAIID units can be uniform from state to state.

AIIPA recommends that states and jurisdictions adopt the NHTSA Model Specifications effective May 8, 2014 for their ignition interlock program.

The following pages contain best practices listed in the same order as in the NHTSA Model Specifications. This document will be updated as new challenges arise and technology evolves.

Each best practice contains a short description of the material found in the NHTSA Model Specifications followed by the AIIPA recommendation.

At the end of this document, there is a section on calibration using a wet bath simulator and dry gas standard.

Section II (A) - General Comments

NHTSA:

- Stated that the Model Specifications are intended to apply to the performance of BAIID units, not the manner in which States and local jurisdictions conduct their programs.
- Defers to the discretion of States and local jurisdictions regarding programmatic decisions.

AIIPA Best Practice:

- Recommends that states and jurisdictions adopt the NHTSA Model Specifications effective May 8, 2014 for their ignition interlock program.

Section II (B)(3) - Retests

NHTSA:

- The Model Specifications no longer specify how retests should be conducted.
  - This is more appropriately a function for States and local jurisdictions.
  - The Model Specifications were revised to remove this reference.
- After the driver is alerted to retest, if the engine is accidentally or intentionally powered off, the BAIID must not allow the vehicle to start without a service call (p. 26864).

AIIPA Best Practice:

- An alcohol set-point of .025 g/210L with consideration to drivers under the age of 21 years;
- First retest: 5-15 minutes;
- Second and subsequent tests: 15-45 minutes (from the conclusion of previous retest);
- Time to test: 6 minutes;
- BAIID should accept unlimited samples within the defined retest timeframe; and
- BAIID should not temporary lockout during the retest (to allow for the provision of multiple breath samples). This helps to eliminate mouth alcohol claims.

Section II (B)(4) - Alerts

NHTSA:

- No recommendations in the 1992 Model Specifications.
- Concluded that the decision about the type of alerts that may be required and/or permitted are programmatic in nature, and should be at the discretion of States and local jurisdictions.

AIIPA Best Practice:

- Recognizes that flashing headlights may be against state statutes, as such, each state or jurisdiction should define the type(s) of alerts to be utilized. Example of potential alert mechanisms may be: honking horn, emergency flashing lights, or some other audible tone.

Section II (B)(5) - Emergency Override

NHTSA:

- No recommendations in the 1992 Model Specifications.
- Concluded that the decision whether to permit the use of an emergency override feature is programmatic in nature and should be left to the direction of states and local jurisdictions.

AIIPA Best Practice:

- If a state or jurisdiction elects to utilize the emergency override feature, AIIPA recommends that a breath test should be required, the event be recorded in the data logger, and that the device functions normally following the override.

Section II (B)(6) - Calibration Stability and Service Interval

NHTSA:

- Current technology now permits ignition interlocks to maintain stable calibration for longer periods of time and the Model Specifications provide for a minimum calibration stability period of 37 days (30 days plus the 7-day lockout countdown).
- De-coupled the period of calibration stability and the service interval.

AIIPA Best Practice:

- Calibration stability and service interval of the BAIID should not exceed 67 days.
- States must consider environmental conditions when setting calibration intervals.

Section II (C)(2)(b) - Set point

NHTSA:

- Recognizes that state BrAC levels are not uniform and most are set at 0.02 g/dL, while others are set at other (generally higher) levels.
- Recommends a 0.02 g/dL set point for testing, but notes that the technology is available for BAIIDs to achieve and maintain a set point at this level.

AIIPA Best Practice:

- An alcohol set-point of .025 g/210L with consideration to drivers under the age of 21 years.

Section II (C)(3)(a)(i) – Breath Sample Volume

NHTSA:

- Notes that lowering the minimum breath sampling size will make the BAIID available to a larger population of users.
- No evidence was submitted to indicate that the reduced volume will diminish the integrity of the breath samples.
- If a state wishes to set its minimum breath sampling size at 1.5 L and permit a 1.2 L level upon a medical recommendation, the Model Specifications will be able to support them in this decision.

AIIPA Best Practice:

- Recommend 1.5 L unless granted a medical exemption. If states allow for lower volume there must be a medical review process in place for lowering breath volume. Documentation of lung volume/function should be obtained. Volume should not be less than 1.2 L.

Section II (C)(3)(b)– Warm Up Time

NHTSA:

- 1992 Model Specifications required the BAIID to be ready for operation within 5 minutes of being turned on at -20 C (-4 F).
- NHTSA has revised the Model Specifications to provide that BAIIDs must be ready for all tests and retests within a period of 3 minutes.

AIIPA Best Practice:

- Agree with NHTSA.

Section II (C)(3)(b)– Anti-Circumvention

NHTSA:

- 1992 Model Specifications required several tests to address circumvention and tampering.
- The revised Model Specifications do not specify the use of any particular type of anti-circumvention feature, since this would be tantamount to a design, rather than a performance standard.
- Will not attempt to establish further minimum performance criteria for this function at this time.

AIIPA Best Practice:

- Anti-circumvention should be engaged and demonstrable during the life of the installation.

Page 26863 – Tamper Proof Seals

NHTSA:

- The BAIID must have tamper proof seals to indicate when it has been disconnected from the ignition.

AIIPA Best Practice:

- A visual inspection should be done during the service visit to affirm that the seal is intact.
- Seals should be on every connection and must be proprietary to the manufacturer.

Appendix A – Quality Assurance Plan Template

NHTSA:

- Recommended calibrating unit(s) listed on NHTSA's Conforming Products List of Calibrating Units for Breath Alcohol Testers and instructions for using 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 0.005 BrAC.
- Description of how to verify the accuracy of the BAIID reading of BrAC (e.g. from an instrument read out, printout, interlock data logger, etc.).

AIIPA Best Practice:

- Recommends that a state or jurisdiction require a manufacturer to provide a quality assurance plan in accordance with Appendix A of the NHTSA Model Specifications (May 8, 2013) on a prescribed interval as defined by that entity.

Section II (D)(2)– Vehicle- Interlock Interface

NHTSA:

- Notes that a common interface in vehicles for ignition interlocks is outside the scope of the Model Specifications.
- Has not included such a requirement in the revised Model Specifications.

AIIPA Best Practice:

- Agree with NHTSA.

Effective Date of Revised Model Specifications

NHTSA:

- Approved May 8, 2013. Effective May 8, 2014.
- The revised Model Specifications, rather than the 1992 version, should be used once they become effective.
- The Model Specifications will not take effect immediately, but rather will be delayed for one year, to provide manufacturers of BAIIDs sufficient time to make conforming modifications to their instruments and to conduct testing, as warranted.

AIIPA Best Practice:

- States or jurisdictions should require written verification from an ISO accredited laboratory that the BAIID meets or exceeds the most current NHTSA Model Specifications.

Calibration

Note: The following are calibration recommendations from AIIPA using a wet-bath simulator and a dry-gas cylinder standard.

Wet Bath

- Simulators used must be listed on the Conforming Products List (CPL).
- Tubing:
  - tygon tubing;
  - length as short as possible (not to exceed 6"); and,

- connections should be secure and closed off.
- The simulator must have a sticker reflecting the date of calibration.
- Solutions used must:
  - be NIST traceable;
  - labeled with lot# and expiration date;
  - accompanied by a Certificate of Analysis (COA);
  - stored and used in a climate controlled environment;
  - used prior to expiration date;
  - be 500 mL in volume;
  - must be replaced every 30 days or 30 tests; and,
  - record use in a calibration log.
- The simulator should be allowed to come to a constant temperature using a warm-up time of at least 45 minutes.

Dry Gas

- Standard must be found on the CPL.
- Tubing:
  - tygon tubing; and,
  - length as short as possible (not to exceed 6").
- Standards used must:
  - be NIST traceable;
  - labeled with lot# and expiration date;
  - accompanied by a Certificate of Analysis (COA);
  - stored and used in a climate controlled environment;
  - used prior to expiration date; and,
  - record use in a calibration log.
- Elevation adjustment:
  - the expected ethanol value of a dry gas standard changes with elevation;
  - the higher the elevation, the lower the reading.

Dry-gas Ethanol Concentration Elevation Correction Chart

Elevation (ft)	.030 g/210L	.050 g/210L	.080 g/210L	.100 g/210L
0	0.030	0.050	0.080	0.100
250	0.029	0.049	0.079	0.099
500	0.029	0.049	0.078	0.098
750	0.029	0.048	0.077	0.097
1000	0.028	0.048	0.077	0.096
1250	0.028	0.047	0.076	0.095
1500	0.028	0.047	0.076	0.095
1750	0.028	0.047	0.075	0.094
2000	0.027	0.046	0.074	0.093
2500	0.027	0.045	0.073	0.091
3000	0.027	0.045	0.072	0.090
3500	0.026	0.044	0.070	0.088
4000	0.026	0.043	0.069	0.087
4500	0.025	0.042	0.068	0.085
5000	0.025	0.042	0.067	0.084
5500	0.024	0.041	0.066	0.082
6000	0.024	0.040	0.064	0.081
6500	0.023	0.039	0.063	0.079
7000	0.023	0.039	0.062	0.078
7500	0.023	0.038	0.061	0.076
8000	0.022	0.037	0.060	0.075
8500	0.022	0.037	0.059	0.074
9000	0.021	0.036	0.058	0.072
9500	0.021	0.035	0.057	0.071
10000	0.021	0.035	0.056	0.070
10500	0.020	0.034	0.055	0.068
11000	0.020	0.033	0.054	0.067
11500	0.019	0.033	0.053	0.066
12000	0.019	0.032	0.052	0.065

Note: All results are truncated to 3 digits.

Compiled by Laura Bailey, AIIPA Secretary.