

**Drawbaugh, Bob**

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**From:** Harnois, Steven  
**Sent:** Friday, October 31, 2008 6:19 AM  
**To:** Drawbaugh, Bob  
**Subject:** FW: Scanned document from Fabiani, Paul B.

Bob,

Based on conversations we have had before I believe this RPC to be acceptable.

I did not receive a copy of the failed RPC.

Thanks, Steve

Steven Harnois  
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Agency Of Human Services  
Department of Health  
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-----Original Message-----

**From:** Fabiani, Paul B. [mailto:pfabiani@bpdvt.org]  
**Sent:** Wednesday, October 29, 2008 10:26 PM  
**To:** Harnois, Steven  
**Subject:** FW: Scanned document from Fabiani, Paul B.

Hey Steve,

The first RPC failed as the max external standard was .108, and the Acc Precision test showed a .109. The Datamaster failed that one. The second bottle of solution I put in had a max ext standard of .105, and stayed at a .105 for the accuracy and precision test and the first actual breath sample test. But when I did the RFI test it showed a .106 on the ticket. What do you think?

I called Amanda to let her know about the first solution issue as you were off shift but I am letting you know about this .106 issue. the machine is still in service unless you specify otherwise.

The last bottle of solution I had will expire on 11-16-08, so hopefully we get the new datamaster by then or I will need another bottle to do a solution change.

Do you think this .106 reading will go back down or should we take it out of service.

Thanks

Paul

10/31/2008

# The DataMaster

Carl G. Tremmel

Breath testing by use of an infrared breath testing instrument is a scientifically reliable, analytically accurate, and universally accepted method to determine the ethyl alcohol concentration of persons suspected of driving under the influence of intoxicating liquor. Use of this method is provided for in Title 23 *Vermont Statutes Annotated*, S.1203 for persons operating a motor vehicle in violation of Title 23 V.S.A. S.1201. The DataMaster was selected by the Vermont Department of Health as the instrument of choice for Vermont after thoroughly testing all the infrared breath testing instruments meeting the requirements established by the Department of Health.

The DataMaster is included in the National Highway Traffic Safety Administration's (NHTSA) "Conforming Products List of Evidential Breath Measurement Devices" found in the *Federal Register*, Vol. 56 No. 54, pp 11818-11819 (1991). The Commissioner of Health for Vermont has approved and continues to approve the DataMaster as the instrument of choice for Vermont. ("Approval of Instrumentation and Procedures", Effective Date: February 15, 1992.)

Many people without scientific backgrounds find Infrared (IR) Spectrophotometry, used by the DataMaster, to be a mysterious process. In fact, an IR instrument is a simple and reliable means to accurately measure the alcohol concentration of a human breath sample. This article provides a step by step explanation which should help Vermont's legal practitioners understand the DataMaster instrument.

## Calibration

Once calibrated, analytical chemical instrumentation can be used to provide accurate, precise, reliable sample test results. DataMaster instruments are calibrated by the manufacturer before being sent to the purchaser. The DataMaster has the calibration permanently stored in the computer software. Although the Department of Health checks the calibration of each instrument during certification, an instrument is not recalibrated unless the instrument does not meet certification specifications or unless the message "NOT CALIBRATED" appears on the display screen. If such a message appears, the DataMaster will not analyze a person's breath sample.

Before a DataMaster instrument is placed in the field for use, the calibration, accuracy and precision are checked by the Vermont Department of Health as a part of the certification process for each instrument.

## Certification

Each DataMaster instrument received for use in Vermont is certified by the Department of Health for accuracy and precision as well as recognition of common interfering substances. This certification procedure uses standard alcohol vapor concentrations of 0.02, 0.05, 0.10, and 0.40% from a simulator<sup>1</sup> to assure that the instrument accurately measures a subject's breath alcohol concentration. A simulator is a device which closely *simulates* human breath samples.

*... help Vermont's legal practitioners understand the DataMaster instrument.*

NHTSA recommends the use of simulators when certifying evidential breath testing instruments for accuracy and precision (see *Federal Register*, Vol. 49, No. 242, pp 48855-48856 (1984) under the heading "Model Specifications"). They state that "The result is a *more accurate and reliable* evaluation of EBT's (Evidential Breath Testers) using a simpler, more cost-effective technique" than the use of human subjects. Further, "The agency *recommends* use of the BASS (Breath Alcohol Sample Simulator) as the *preferred* method for evaluating EBT's" (emphasis added) for accuracy and precision. The Department of Health has followed these recommendations.

In order for a DataMaster instrument to be certified by the Department of Health, the average concentration of a 0.10% standard, which is also used as a control, must be within plus or minus 5% of the known concentration<sup>2</sup> and the precision of seven replicate<sup>3</sup> samples tested must be within plus or minus 2% of the average concentration. This is well within the requirements of Section C.I.4 for accuracy and C.I.2 for precision of the Department of Health Rule for Breath and Blood Alcohol Analysis.

## Accuracy

Section C.I.4. of the Breath and Blood Alcohol Analysis rule relates to the certification of each DataMaster instrument for conformance to specifications for *accuracy*. The rule requires that "instrumentation shall be capable of determining the breath alcohol concentration of the person sampled within plus or minus 10% . . .". As shown in the section relating to instrument certification, the instrument must be able to measure the concentration of an alcohol standard of

known concentration (0.10%), within plus or minus 5% of the average value for that standard when seven replicate samples are measured. Each instrument certified by the Department of Health meets this requirement.

As a further verification of the accuracy of the DataMaster instrument, an experiment was conducted in which 62 alcohol vapor standards of known concentration were simultaneously crimped for analysis by gas chromatography as well as directly analyzed by the DataMaster instrument. Each one of the alcohol vapor standards was analyzed independently by headspace gas chromatography. The comparison showed a correlation greater than 99% between the two methods, thus confirming that the DataMaster infrared analysis was virtually identical to the indium crimp/gas chromatography analysis for replicate portions of the same simulated breath sample.

The Arkansas Department of Health has performed extensive tests to determine the accuracy of the DataMaster in comparison with other breath testing devices. The result of their testing is documented in the "Evaluation of Breath Test Instruments" report dated June, 1987. The data show that the DataMaster is as accurate and precise as any infrared breath testing instrument on the market, meeting all the requirements set forth by NHTSA in the "Model Specifications for Evidential Breath Testing Devices". See *Federal Register*, Vol. 49, No. 242, pp 48856-48864 (1984). Arkansas is now using the DataMaster instrument statewide as a result of this study.

The State Laboratory of Hygiene, University of Wisconsin, conducted a study comparing the blood-alcohol test results with breath-alcohol results obtained with an infrared breath testing device. ("Field Performance of the Intoxilyzer 5000—A Comparison of Blood-and Breath-Alcohol Results in Wisconsin Drivers", Patrick M. Harding, B.S.; Ronald H. Laessig, Ph.D.; and Patricia H. Field, Ph.D., *Journal of Forensic Sciences*, September 1990, pp 1022-1028.) Compared with the blood alcohol result, the infrared results were lower or within 0.01 g/210L 98% of the time. The conclusion was reached "that, in the context of a carefully controlled breath-alcohol testing program, the Intoxilyzer 5000 (an infrared instrument) is likely to underestimate blood-alcohol concentrations in the driving population".

The South Carolina Law Enforcement Division has selected the DataMaster as the