



State of Alaska Department of Public Safety

Sean Parnell, Governor
Joseph A. Masters, Commissioner

State of Alaska Breath Alcohol Program

DataMaster DMT Ventilation

January 31, 2012

The Breath Alcohol Program began its rollout of the DataMaster DMT-G (This is the DMT model with an attached dry gas standard compartment.) breath testing instrument in March of 2011. This process continues today and eventually will result in the replacement all of the DataMaster cdm instruments that were put in use in Alaska beginning in 2000.

As designed and delivered by the manufacturer the DataMaster DMT-G exhausts samples through a vent located in the bottom of the instrument. The instrument design has an opening between the sample chamber and detector which allows the filter wheel and internal standard to transition in and out of the light path.

In July of 2011, after conferring with an engineer from the manufacturer, sample exhaust was rerouted to an unused gas port located in the rear panel of the instrument. This was done in response to instances of "blank error" status messages received on the new instruments. All instruments placed in the field from that time forward are rear vented. The change from bottom to rear venting decreased the frequency of "blank error" status messages received.

While the Breath Alcohol Program was working with rear vented instruments utilizing dry gas samples of a 0.200 and 0.300 it was discovered that there was potential for bottom vented instruments to have higher readings than rear vented instruments with the same dry gas standards. This came to light in December 2011 during discussions with the manufacturer about the dry gas standard test results observed in laboratory testing. This lead to the knowledge that this opening between the sample chamber and detector has the potential to allow a gas sample to enter this opening as it exhausts from the sample chamber. If this occurs, the potential exists for a small elevation in the analyzed ethanol value.

The theoretical possibility of a breath testing instrument consistently measuring a subject breath sample at a level more or less than the actual ethanol level is scientifically classified as a systematic error. The National Highway Traffic Safety Administration (NHTSA) is responsible

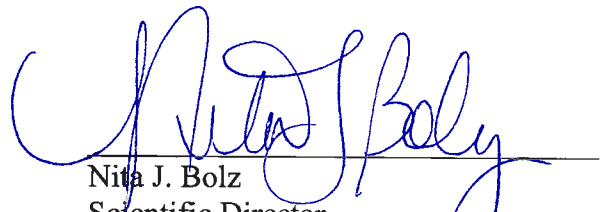
for establishing specifications that breath alcohol measuring instruments must meet. *See*, 58 FR Sec. 48705. The NHTSA specifications allow for a systematic error at a 0.080 breath alcohol concentration of less than or equal to 0.005. The DataMaster DMT instrument was confirmed to meet all NHTSA model specifications for breath alcohol testers in August of 2004 and placed on the NHTSA Conforming Products List.

Information supplied by the DataMaster DMT-G manufacturer reflects that the theoretical maximum effect of the instrument design is an increase of 2.5% to the value of the sample analyzed. At a 0.080 breath alcohol concentration, the theoretically possible maximum increase therefore would be 0.002.

Based on this new information the Breath Alcohol Program began to evaluate the impact this design configuration might have on samples. Laboratory testing was performed to examine the possibility of exhausted samples entering the opening between the sample chamber and the detector. This testing was performed utilizing both rear and bottom vented instruments. Simulated breath samples were delivered via a gas tight syringe and dry gas standards were delivered via the internal regulator of the instrument during the laboratory testing.

All laboratory testing results at the 0.080 alcohol level fell within the 0.005 parameter allowed by NHTSA. Laboratory testing at the 0.300 alcohol level varied between no effect and a maximum difference between rear and bottom vented instruments of 0.009. NHTSA does not have a performance requirement at alcohol levels above 0.160. There are inherent variabilites present with all human breath samples. Due to this the laboratory cannot determine what effect, if any, may have occurred on individual subject tests.

The Breath Alcohol Program is in the process of assuring that all DataMaster DMT-G instruments are configured so as to exhaust samples out the rear of the instrument to minimize this source of uncertainty.



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