



Breath Alcohol Calibration Test No. 15-569 Summary Report

This test was sent to 25 participants. Each sample pack consisted of four 34L certified reference material dry gas cylinders which participants were requested to analyze. Data were returned from 19 participants (76% response rate) and are compiled into the following tables:

	<u>Page</u>
<u>Manufacturer's Information</u>	<u>2</u>
<u>Summary Comments</u>	<u>3</u>
<u>En Analysis Guide</u>	<u>4</u>
<u>Table 1: Reported Results</u>	<u>5</u>
<u>Graph 1: En Results</u>	<u>9</u>
<u>Table 2: Corrections</u>	<u>10</u>
<u>Table 3: Instrument Information</u>	<u>11</u>
<u>Table 4: Last Calibration Information</u>	<u>12</u>
<u>Table 5: Additional Comments</u>	<u>13</u>
<u>Appendix: Data Sheet</u>	<u>14</u>

This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample set consisted of four 34L certified reference material dry gas cylinders (Items 1-4). Participants were requested to analyze the contents of each cylinder and report the apparent breath alcohol concentration.

SAMPLE PREPARATION-

Each dry gas cylinder was compared to its corresponding Certificate of Analysis. After verifying the breath alcohol concentration with the lot number, the cylinder was labeled with the appropriate Item number.

SAMPLE SET ASSEMBLY: Each sample set was assembled with an Item 1, 2, 3 and 4 in a pre-labeled sample pack box.

<u>Item</u>	<u>Lot number</u>	<u>Breath Alcohol Concentration</u> <u>(g/210L)</u>	<u>Manufacturer's Uncertainty</u> <u>(g/210L)</u>
1	19115190A3	0.19	± 0.0038
2	19115080A2	0.08	± 0.002
3	19115340A4	0.34	± 0.0068
4	19115030A1	0.03	± 0.002

The information presented here details how test samples were prepared as well as any design specifications. This information does not necessarily represent the answers that should or could be obtained from an examination of the sample(s). Final interpretation of the results should be deferred until the summary report is available.

Summary Comments

This test was designed to allow participants to assess their proficiency in the previous calibration of their breath alcohol instrument. Each participant was supplied with a sample set consisting of four 34L certified reference material dry gas cylinders which contained different breath alcohol concentration (BrAC) values. (Refer to Manufacturer's Information for production details.)

En analysis was performed on reported results for each item. Please refer to the En Analysis Guide for more information on this statistical analysis. Seven participants reported "extreme" data (En absolute values greater than 1.00) for Item 1, two participants reported "extreme" data for Item 2, seven participants reported "extreme" data for Item 3, and two participants reported "extreme" data for Item 4.

Two of the breath alcohol concentration values were chosen that were outside of the normal testing range in order to achieve linearity. The linearity of the participant's results could then be analyzed utilizing regression statistics. For a significant number of participants, linearity was not achieved and therefore that analysis was not performed.

CTS acknowledges that there was some confusion regarding the wording of question 1a. The intention of this question was to ask for the reported concentration of the provided dry gas cylinders, as well as the previously calculated uncertainty of the instrument. Improvements will be made on the data sheet for future tests to clarify this.

CTS noted many participants reported their instrument's serial numbers. For the sake of anonymity, CTS did not reproduce this information in the report.

En Analysis Guide

Normalized Error, or E_n , is used in proficiency testing in many other industries to judge the quality of measurement results. It measures the relationship of a participant's value to the reference value, relative to the combined uncertainties of those values. E_n is calculated as follows:

$$E_n = \frac{(X_{lab} - X_{ref})}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Where the assigned value, X_{ref} , is determined in the manufacturer's reference laboratory, U_{ref} is the expanded uncertainty of X_{ref} , and U_{lab} is the Expanded Uncertainty of a participant's result, X_{lab} . E_n is not calculated for participants who did not report their Expanded Uncertainty.

Absolute values of E_n less than **1.00** should be obtained for the measurements to be acceptable. This is because there is a 95% probability that the calculated E_n will fall within an absolute value of 1.00. Any absolute values over 1.00 have been highlighted with an "X".

The following table and graph represent the results reported by participants.

X_{ref} and U_{ref} were determined by the dry gas cylinder manufacturer. The manufacturer is an accredited ISO Guide 34 reference material supplier with an ISO 17025 accredited laboratory.

Reported Results

Report the ethanol concentration of the dry gas standards that would be reported on a calibration certificate.

TABLE 1 - Item 1

$$E_n = \frac{(X_{lab} - X_{ref})}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 1 Manufacturer's Concentration: 0.19 g/210L

Item 1 Manufacturer's Uncertainty: ± 0.0038 g/210L

WebCode	Concentration (g/210L)	Uncertainty (g/210L)	Coverage factor k (not used in En)	Performance Statistic (En1)
2B8VDG	0.1890			
4ZX9DE	0.1760	± 0.0080	3	-1.58 X
6FTP3D	0.1740	± 0.0070	3	-2.01 X
88RGAH	0.1850	± 0.0130	2	-0.37
8P6VRC	0.1800	± 0.0070	3	-1.26 X
8T8WRA	0.1930	± 0.0090	3.17	0.31
96F2FG	0.1910	± 0.0030	2.776	0.21
9TP879	0.1790	± 0.0090	3.17	-1.13 X
CUQC98	0.1710	± 0.0070	3	-2.39 X
CYV9T8	0.1760	± 0.0070	3	-1.76 X
GY3NDA	0.0290	± 0.0040	3	-29.18 X
J6H9B7	0.1880	± 0.0090	3.17	-0.20
K6F2JY	0.1910	± 0.0039	2.576	0.18
MQVZ3X	0.1880	± 0.0020	2	-0.47
NAFGJW	0.1890	± 0.0021	2	-0.23
NC6M4U	0.1856	± 0.0080	3	-0.50
QT6GMY	0.1830			
UC42QN	0.1879			
X824UR	0.1880	± 0.0040	3	-0.36

TABLE 1 - Item 2

$$E_n = \frac{(X_{lab} - X_{ref})}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 2 Manufacturer's Concentration: 0.08 g/210L

Item 2 Manufacturer's Uncertainty: ± 0.002 g/210L

WebCode	Concentration (g/210L)	Uncertainty (g/210L)	Coverage factor k (not used in E _n)	Performance Statistic (E _n 2)
2B8VDG	0.0790			
4ZX9DE	0.0730	± 0.0040	3	-1.57 X
6FTP3D	0.0730	± 0.0070	3	-0.96
88RGAH	0.0760	± 0.0080	2	-0.49
8P6VRC	0.0760	± 0.0070	3	-0.55
8T8WRA	0.0820	± 0.0040	3.17	0.45
96F2FG	0.0790	± 0.0030	2.776	-0.28
9TP879	0.0770	± 0.0040	3.17	-0.67
CUQC98	0.0720	± 0.0070	3	-1.10 X
CYV9T8	0.0730	± 0.0070	3	-0.96
GY3NDA	0.0790	± 0.0040	3	-0.22
J6H9B7	0.0790	± 0.0040	3.17	-0.22
K6F2JY	0.0800	± 0.0040	2.576	0.00
MQVZ3X	0.0790	± 0.0020	2	-0.35
NAFGJW	0.0810	± 0.0021	2	0.34
NC6M4U	0.0820	± 0.0080	3	0.24
QT6GMY	0.0770			
UC42QN	0.0801			
X824UR	0.0790	± 0.0040	3	-0.22

TABLE 1 - Item 3

$$E_n = \frac{(X_{lab} - X_{ref})}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

Item 3 Manufacturer's Concentration: 0.34 g/210L

Item 3 Manufacturer's Uncertainty: ± 0.0068 g/210L

WebCode	Concentration (g/210L)	Uncertainty (g/210L)	Coverage factor k (not used in E _n)	Performance Statistic (E _n 3)
2B8VDG	0.3480			
4ZX9DE	0.3160	± 0.0080	3	-2.29 X
6FTP3D	0.3090	± 0.0070	3	-3.18 X
88RGAH	0.3300	± 0.0240	2	-0.40
8P6VRC	0.3210	± 0.0070	3	-1.95 X
8T8WRA	0.3450	± 0.0090	3.17	0.44
96F2FG	0.3400	± 0.0030	2.776	0.00
9TP879	0.3160	± 0.0090	3.17	-2.13 X
CUQC98	0.3050	± 0.0070	3	-3.59 X
CYV9T8	0.3180	± 0.0070	3	-2.25 X
GY3NDA	0.1880	± 0.0040	3	-19.27 X
J6H9B7	0.3300	± 0.0090	3.17	-0.89
K6F2JY	0.3400	± 0.0039	2.576	0.00
MQVZ3X	0.3430	± 0.0020	2	0.42
NAFGJW	0.3430	± 0.0021	2	0.42
NC6M4U	0.3299		3	
QT6GMY	0.3280			
UC42QN	0.3353			
X824UR	0.3370	± 0.0040	3	-0.38

TABLE 1 - Item 4

$$E_n = \frac{(X_{lab} - X_{ref})}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

X_{lab}: Participant's concentration
 X_{ref}: Manufacturer's concentration
 U_{lab}: Participant's uncertainty
 U_{ref}: Manufacturer's uncertainty

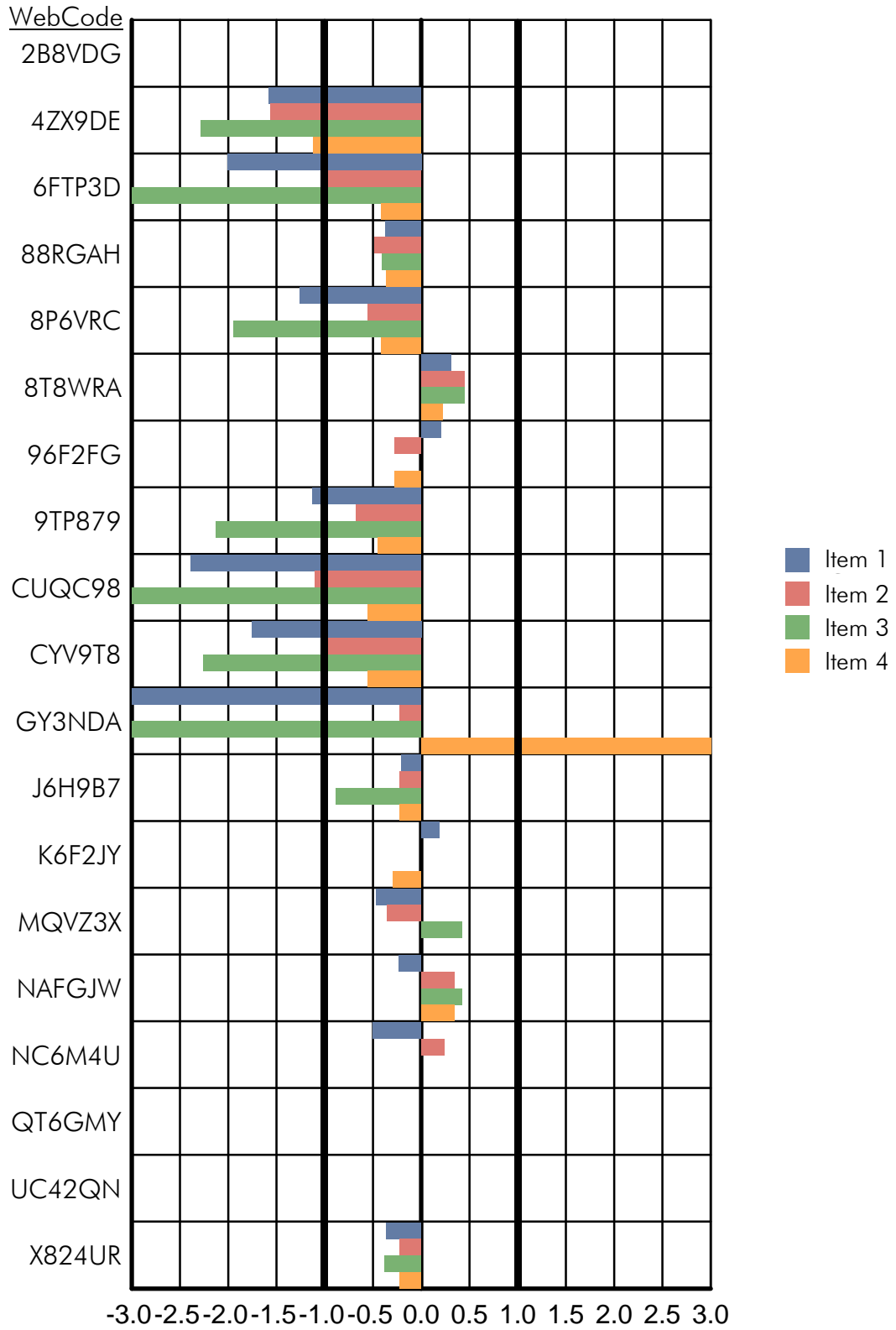
Item 4 Manufacturer's Concentration: 0.03 g/210L

Item 4 Manufacturer's Uncertainty: ± 0.002 g/210L

WebCode	Concentration (g/210L)	Uncertainty (g/210L)	Coverage factor k (not used in E _n)	Performance Statistic (E _n 4)
2B8VDG	0.0300			
4ZX9DE	0.0250	± 0.0040	3	-1.12 X
6FTP3D	0.0270	± 0.0070	3	-0.41
88RGAH	0.0270	± 0.0080	2	-0.36
8P6VRC	0.0270	± 0.0070	3	-0.41
8T8WRA	0.0310	± 0.0040	3.17	0.22
96F2FG	0.0290	± 0.0030	2.776	-0.28
9TP879	0.0280	± 0.0040	3.17	-0.45
CUQC98	0.0260	± 0.0070	3	-0.55
CYV9T8	0.0260	± 0.0070	3	-0.55
GY3NDA	0.3350	± 0.0060	3	48.22 X
J6H9B7	0.0290	± 0.0040	3.17	-0.22
K6F2JY	0.0290	± 0.0028	2.576	-0.29
MQVZ3X	0.0300	± 0.0020	2	0.00
NAFGJW	0.0310	± 0.0021	2	0.34
NC6M4U	0.0349		3	
QT6GMY	0.0290			
UC42QN	0.0304			
X824UR	0.0290	± 0.0040	3	-0.22

En Results

Graph 1



Corrections

TABLE 2

List the type and amount of each correction made on the raw data to produce the reported concentration.

WebCode	
2B8VDG	N/A
6FTP3D	No corrections were made to the raw data to produce the reported results.
88RGAH	The raw data values are corrected within instrument software.
8P6VRC	No corrections were made on the raw data to produce the reported concentration. It has been decided that this will be the lowest of the 9 raw data values for each item tested. This is in line with the protocol[sic] we use for subject test results.
8T8WRA	No correction needed as the instrument used contains an internal pressure sensor and adjustment.
96F2FG	None. Our instruments are designed to utilize uncorrected tanks. The results are the raw data from the instrument when conducting an accuracy check utilizing the tanks provided.
9TP879	No correction made. Internal pressure transducer on instrument.
CUQC98	No corrections were performed on the data.
CYV9T8	No corrections were made on the raw data to produce the reported concentration.
GY3NDA	None.
J6H9B7	Because we have an internal pressure transducer, no corrections were needed.
K6F2JY	+4% correction factor for dry gas standard and barometric pressure correction (744/760)
NAFGJW	No correction was made on the raw data to produce the reported concentration.
NC6M4U	Instrument applies correction for altitude; however, no external corrections were applied to the data.
QT6GMY	N/A
UC42QN	To Be Determined
X824UR	N/A

Instrument Information

TABLE 3

Instrument Information

WebCode	Instrument used	Detector type
2B8VDG	Alcotest 9510, Draeger [S/N]	IR + EC
4ZX9DE	Intoximeter EC/IR II	Fuel Cell
6FTP3D	Intoximeter EC/IR II	Fuel Cell
88RGAH	Intoximeters Alcosensor V-XL e POA	Fuel Cell
8P6VRC	EC/IR II	Fuel Cell
8T8WRA	Dräger Alcotest A7510 [S/N]	Fuel Cell
96F2FG	AlcoSensor IV-XL Point of Arrest	Fuel Cell
9TP879	Dräger Alcotest 7510 [S/N]	Electrochemical Fuel Cell
CUQC98	Intoximeter[sic] EC/IR II	Fuel Cell[sic]
CYV9T8	Intoximeter EC/IR 2	Fuel Cell
GY3NDA	DataMaster DMT [S/N]	Infrared
J6H9B7	Dräger Alcotest 7510 [S/N]	Electrochemical sensor (fuel cell)
K6F2JY	EC-IR II (Intoximeters, Inc.)	Fuel Cell
MQVZ3X	Intoxilyzer 8000	IR
NAFGJW	CMI Intoxilyzer 9000	Infrared
NC6M4U	Intoxilyzer 8000 (CMI)	IR
QT6GMY	DataMaster DMT	IR
UC42QN	Intoxilyzer[sic] 8000	IR
X824UR	Datamaster DMT [S/N]	Thermo Electrically Cooled Lead Selenide

Last Calibration Information

TABLE 4

Last Calibration Information

WebCode	Type	Date	Standards
2B8VDG	Internal	1/6/15	0.100% wetbath, 0.400% wetbath, 0.100% dry gas, 0.200% dry gas, 0.080% dry gas, 0.020% dry gas, 0.080% wetbath.
4ZX9DE	Internal	8/25/15	ISO Adjustment September 18, 2013: 0.10 g/210L - 272 ppm. ISO Calibration August 25, 2015: 0.02 g/210L - 54 ppm, 0.08 g/210L - 218ppm, 0.15 g/210L - 408 ppm, 0.25 g/210L - 680 ppm.
6FTP3D	Internal	8/6/15	Dry Gas Standard. Concentration 0.100 g/210L
88RGAH	Internal	10/14/14	Dry Gas - 0.040, 0.080, 0.200
8P6VRC	Internal	7/30/15	EtOH Gas stds- 0.040, 0.082, 0.200 g/210L
8T8WRA	Internal	7/6/15	Dry Gas 0.041g/210L, 0.081g/210L, 0.252g/210L
96F2FG	Internal	3/18/15	ASCLD/LAB Definition of Calibration Adjustment performed utilizing 0.089% Alcohol/water solution LN 081114 in a Guth Model 34C wet bath simulator. ASCLD/LAB Definition of Calibration performed utilizing ILMO Dry Gas Ethanol Devices at concentrations of .041%, .081%, and .191%.
9TP879	Internal	7/21/15	Dry Gas Ethanol, concentrations: 0.041, 0.081, and 0.252 g/210L
CUQC98	Internal	8/18/15	Gas Standard 0.100 g/210L (0.097)
CYV9T8	Internal	8/3/15	dry gas standard - 0.040 g/210L , 0.082 g/210L , 0.200 g/210L
GY3NDA	Internal	8/21/15	Dry Gas: 0.020 g%; 0.040 g%; 0.080 g%; 0.150 g%
J6H9B7	Internal	6/30/15	NIST traceable dry gas certified reference materials of known ethanol concentrations. Concentrations used: 0.041 g/210L, 0.081 g/210L, 0.252 g/210L.
K6F2JY	Internal	8/6/15	Dry gas - 0.100% Ethanol (AirGas)
MQVZ3X	Internal	9/17/15	Ethanol Gas Standards (ILMO) at 0.020, 0.040, 0.080, 0.160 and 0.300 breath alcohol concentrations.
NAFGJW	Internal	7/20/15	Dry Gas - 0.040, 0.080, 0.100, 0.160 g/210L concentrations
NC6M4U	Internal	8/18/15	Wet bath calibration standards utilized at the following concentrations: 0.049, 0.081, and 0.300 g/210L of Breath.
QT6GMY	External	11/26/13	Dry: 0.020, Dry: 0.040, Dry: 0.080, Dry: 0.100, Wet: 0.200, Wet: 0.300
UC42QN	Internal	8/21/15	Dry Gas: 0.020, 0.040, 0.080, 0.200, 0.300
X824UR	Internal	7/7/15	Dry Gas Standard; Concentrations: 0.150 g/210L; 0.080 g/210L; 0.040 g/210L; and 0.020g/210L

Additional Comments

TABLE 5

WebCode	Additional Comments
4ZX9DE	Question 2c is not clear. A calibration can be Internal/External in more than one way.
6FTP3D	In our normal calibration activities we report all data results to our customers. In this case, we were asked for a single reported concentration (1a) [Table 1: Reported Results]. It has been decided that this will be the lowest of the nine raw data values for each item tested. This is in line[sic] with the protocol for subject test results.
8P6VRC	In our normal calibration activities we report all data results to our customer. In this case, we were asked for a single reported[sic] concentration.
96F2FG	Instruments not capable of accepting dry gas samples as screening or evidential sample. Data generated in Accuracy/Calibration check mode. Software requires tank value and adjusts target based upon value of tank and ambient temperature and pressure. Our software assumes dry gas tanks are "uncorrected" and displays the raw value of the sample delivered.
CUQC98	In our normal calibration activities we report all data to our customer. In this case, we were asked for a single reported concentration (1a) [Table 1: Reported Results]. It has been decided that this will be the lowest of the 9 raw data values for each item tested. This is in line with the protocol we use for subject test results.
CYV9T8	In our normal calibration activities, we report all data results to our customers. In this case, we were asked for a single reported concentration. It has been decided that this will be the lowest of the 9 raw data values for each item tested. This is in line with the protocol we use for evidential test results.
GY3NDA	Station Pressure at 1013 mbar.
NAFGJW	The reported results for each ethanol concentration are the average of twenty seven calibration checks. Each of the three laboratory staff members performed nine calibration checks for each concentration.
NC6M4U	The measurement uncertainty has only been calculated for the range of values encompassed by the program's calibration standards. Therefore, it is not possible to apply an uncertainty of measurement for the analyzed values that fell outside of that range (Item 3 and Item 4).
QT6GMY	The barometric pressure at the time of testing was 29.03 inches Hg. Our instrument does not adjust the reported values to standard pressure.
UC42QN	We are in the process of calculating uncertainty.
X824UR	Barometer Reading = 1009mbar

Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

Test No. 15-569: Breath Alcohol Calibration

DATA MUST BE RECEIVED BY September 21, 2015 TO BE INCLUDED IN THE REPORT

Participant Code:

WebCode:

Accreditation Release Statement

CTS submits external proficiency test data directly to ASCLD/LAB and ANAB. Please select one of the following statements to ensure your data is handled appropriately.

This participant's data is intended for submission to ASCLD/LAB and/or ANAB. (Accreditation Release section on the last page must be completed and submitted.)

This participant's data is NOT intended for submission to ASCLD/LAB or ANAB.

Items Submitted (Sample Pack BRC):

Items 1-4: 34L certified reference material dry gas cylinders

1a.) Report the ethanol concentration of the dry gas standards that would be reported on a calibration certificate (Results should be reported to three decimal places in g/210L using your laboratory reporting criteria for expanded uncertainty).

	<u>Reported Concentration</u>		<u>Uncertainty (k=_____)</u>
Item 1:	_____	±	_____
Item 2:	_____	±	_____
Item 3:	_____	±	_____
Item 4:	_____	±	_____

Please note that it is the responsibility of the laboratory to make any appropriate corrections in the reported data as the standards provided in this test are not manufactured with a correction factor.

1b.) List the type and amount of each correction made on the raw data to produce the reported concentration.

Please return all pages of this data sheet.

Participant Code:

WebCode:

1c.) Please use the following section to report any raw data for each Item.

Item 1:

1 _____	4 _____	7 _____
2 _____	5 _____	8 _____
3 _____	6 _____	9 _____

Item 2:

1 _____	4 _____	7 _____
2 _____	5 _____	8 _____
3 _____	6 _____	9 _____

Item 3:

1 _____	4 _____	7 _____
2 _____	5 _____	8 _____
3 _____	6 _____	9 _____

Item 4:

1 _____	4 _____	7 _____
2 _____	5 _____	8 _____
3 _____	6 _____	9 _____

Participant Code:
WebCode:

Instrument Information

2a.) Instrument used: _____

2b.) Detector type: _____

2c.) The last calibration was:

Internal

External

2d.) Date of last calibration: _____

2e.) Type of standard and concentration(s) used for last calibration:

3.) Additional Comments

<p>Return Instructions: Data must be received via online data entry, fax (please include a cover sheet), or mail by <i>September 21, 2015</i> to be included in the report.</p> <p>QUESTIONS? TEL: +1-571-434-1925 (8 am - 4:30 pm EST) EMAIL: forensics@cts-interlab.com www.ctsforensics.com</p>	<p>Participant Code:</p> <p>ONLINE DATA ENTRY: www.cts-portal.com FAX: +1-571-434-1937 MAIL: Collaborative Testing Services, Inc. P.O. Box 650820 Sterling, VA 20165-0820 USA</p>
---	---

Please return all pages of this data sheet.

Collaborative Testing Services ~ Forensic Testing Program

RELEASE OF DATA TO ACCREDITATION BODIES

The following Accreditation Releases will apply only to:

Participant Code:

WebCode:

for Test No. **15-569 Breath Alcohol Calibration**

This release page must be completed and received by **September 21, 2015** to have this participant's submitted data included in the reports forwarded to the respective Accreditation Bodies.

ASCLD/LAB Release

If your lab has been accredited by ASCLD/LAB and you are submitting this data as part of their external proficiency test requirements, have the laboratory's designated individual complete the following. *The information below must be completed in its entirety for the results to be submitted to ASCLD/LAB.*

ASCLD/LAB Legacy Certificate No. _____ ASCLD/LAB International Certificate No. _____

Signature _____ Date _____

Laboratory Name _____

Location (City/State) _____

ANAB RELEASE

If your laboratory maintains its accreditation through ANAB, please complete the following form in its entirety to have your results forwarded.

ANAB Certificate No. _____

Signature and Title _____ Date _____

Laboratory Name _____

Location (City/State) _____

Return Instructions

Accreditation Release

Please submit the completed Accreditation Release at the same time as your full data sheet. See Data Sheet Return Instructions on the previous page.

*Questions? Contact us 8 am-4:30 pm EST
Telephone: +1-571-434-1925
email: forensics@cts-interlab.com*

Please return all pages of this data sheet.