

Certificate of Analysis

Certified Reference Material- Ethanol Water Solution

This Certified Ethanol Reference Solution is a solution of ethanol (ethyl alcohol - Chemical Abstracts Service [CAS] Registry Number 64-17-5) in water.

Lot Code:	<u>21DP41158</u>	Nominal Value:	<u>121.00</u>	mg/dL
Min. Sample Size:	<u>500mL</u>	Certified Value:	<u>121.75</u>	± <u>1.54</u> mg/dL
Solute:	<u>Ethanol</u>	Certification Date:	<u>04-29-2021</u>	
Diluent	<u>Water</u>	Expiration Date:	<u>04-29-2023</u>	

INTENDED USE:

- For the calibration of instruments used to measure breath alcohol concentration.
- The above nominal value in mg/dL is equivalent to .100 BAC with a partition ratio of 2100:1 when solution is used in a breath alcohol simulator operating at 34 ± 0.2 °C.
- Bottles are filled to an approximate volume of 500mL. Each bottle is to be used in its entirety.
- The solution should be used immediately after opening the bottle to avoid concentration changes due to evaporation.
- Not suitable for human or animal consumption.

TRACEABILITY

- Solution is gravimetrically prepared using qualified balances calibrated by ISO 17025:2017 accredited calibration laboratories.
- Concentration of this certified reference material has been analytically verified through the use of gas chromatography.
- Measurements are traceable to SI through NIST.

HANDLING and STORAGE

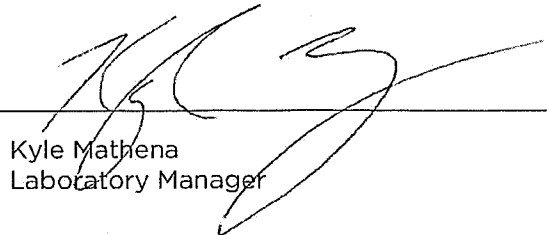
- No special handling is required. Use proper disposal methods.
- Recommended storage temperature: 4-25°C / 39-77°F
- Do not freeze. Do not utilize this certified reference material if it has been frozen or the seal has been compromised.

ANALYTICAL VERIFICATION:

Concentration of the certified value is calculated as the average of multiple analyses carried out utilizing a validated gas chromatography\flame ionization detector method; this method has been demonstrated to adequately detect and quantify concentrations of ethanol in water in the ranges of 5mg/dL to 500mg/dL. Samples are measured gravimetrically through the use of calibrated scales and weights traceable to SI.

Continued:

Uncertainties are reported with a coverage factor $k=2$ with a confidence level of approximately 95%. This certified reference material meets the requirements of ISO 17034:2016. Environmental conditions are controlled to 4-25°C / 39-77°F during manufacturing and testing of this reference material.



Kyle Mathena
Laboratory Manager

Lifeloc Technologies certifies that this solution meets the specifications stated in this certificate and warrants this product to meet the stated accuracy through the expiration date when stored unopened as recommended. Warranty does not apply to bottles stored after opening or that have sustained damage or been altered. This certificate may only be reproduced in full.

SUPERVISOR TEST

Alaska Department of Public Safety
 DATAMASTER dmt: 100405

Date: 05/13/2021
 Time: 13:46:07

SUPERVISOR NAME:
 DEREK WALTON
 OPERATOR'S #: 9508

EXTERNAL STANDARD INFORMATION
 NOMINAL: 0.100

BLANK TEST	0.000	13:47
INTERNAL STANDARD	VERIFIED	13:47
EXTERNAL STANDARD	0.099	13:47
BLANK TEST	0.000	13:48
EXTERNAL STANDARD	0.099	13:49
BLANK TEST	0.000	13:50
EXTERNAL STANDARD	0.099	13:50
BLANK TEST	0.000	13:51
EXTERNAL STANDARD	0.099	13:51
BLANK TEST	0.000	13:52
EXTERNAL STANDARD	0.099	13:52
BLANK TEST	0.000	13:53

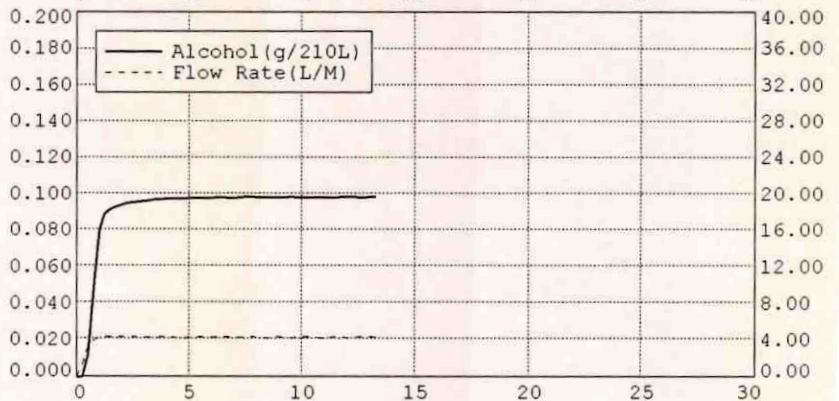
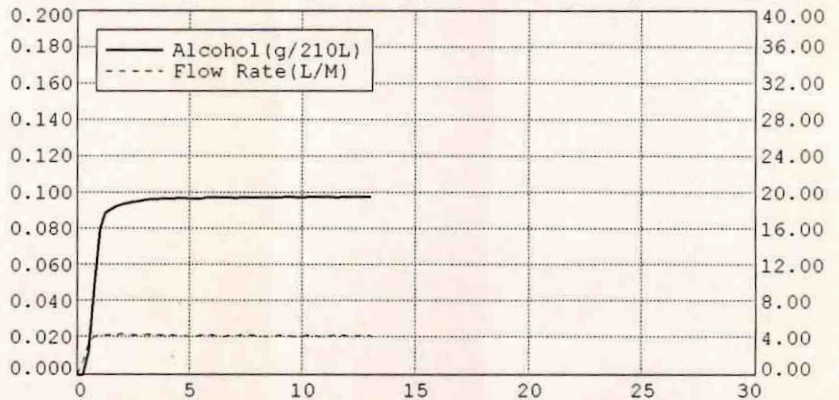
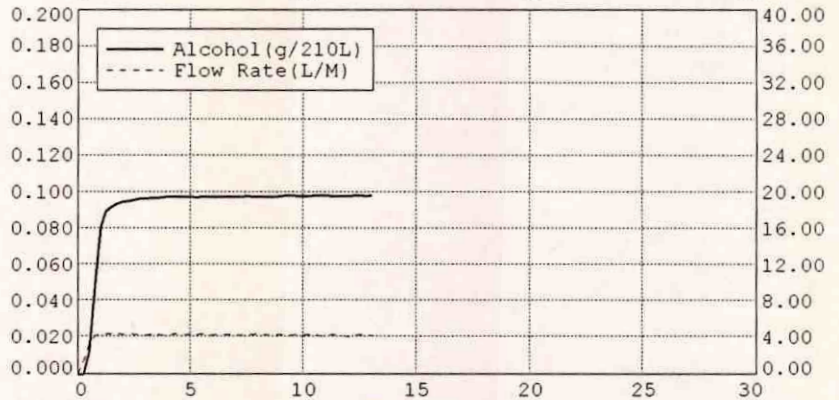
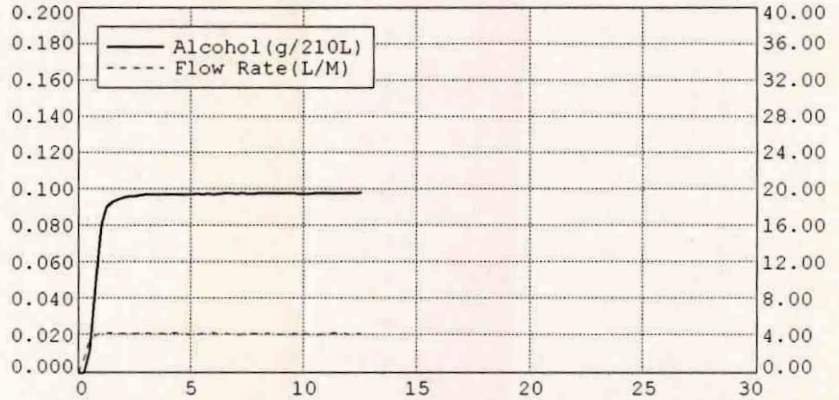
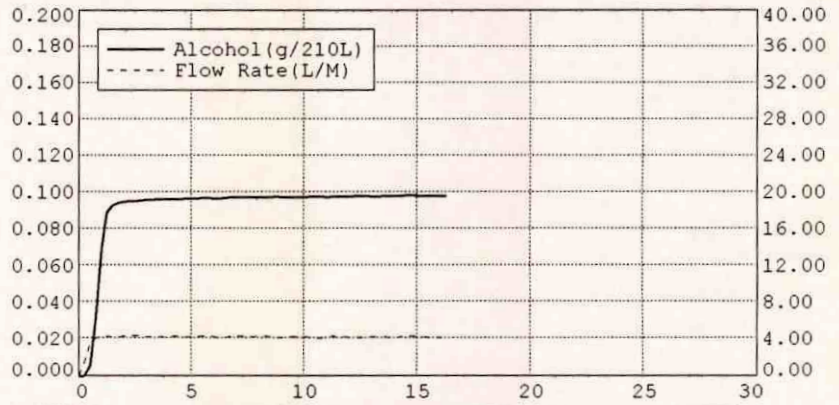
Average = 0.0990
 Std Dev = 0.0000

Simulator S/N: DR4163
 Calibrated: 11/17/2020
 Solution:
 Lifeloc Lot 21DP41158
 Exp. 4/29/2023 DW

0.0990
 0.1006
 0.1026

0.101 = Average

DW CUB 5/17/2021



SUPERVISOR TEST

Alaska Department of Public Safety
 DATAMASTER dmt: 100671

Date: 05/13/2021
 Time: 14:27:13

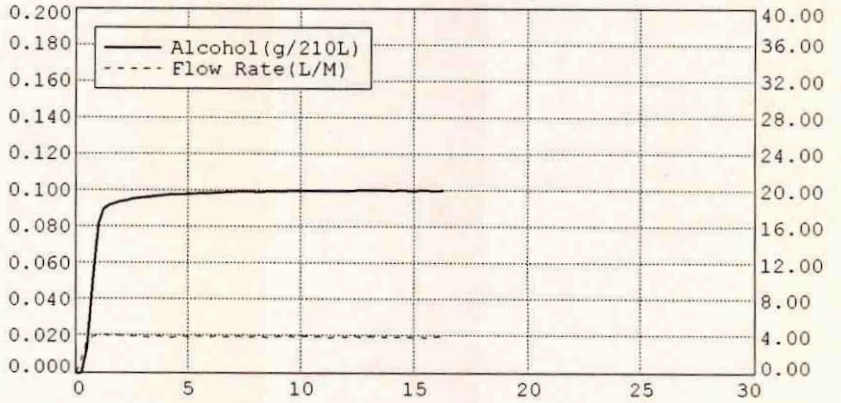
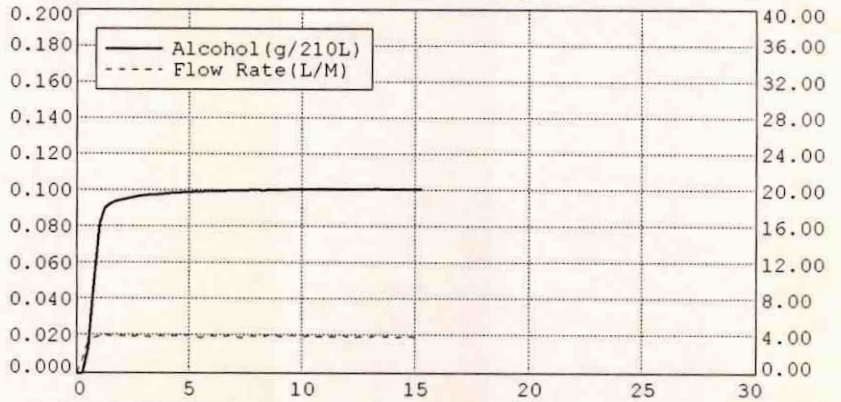
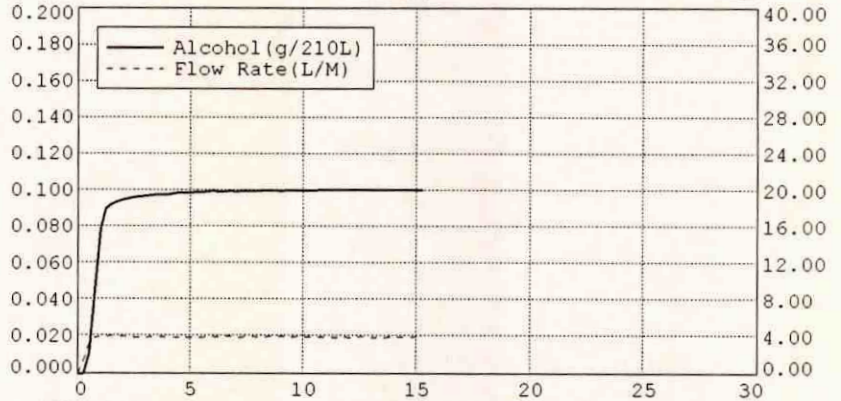
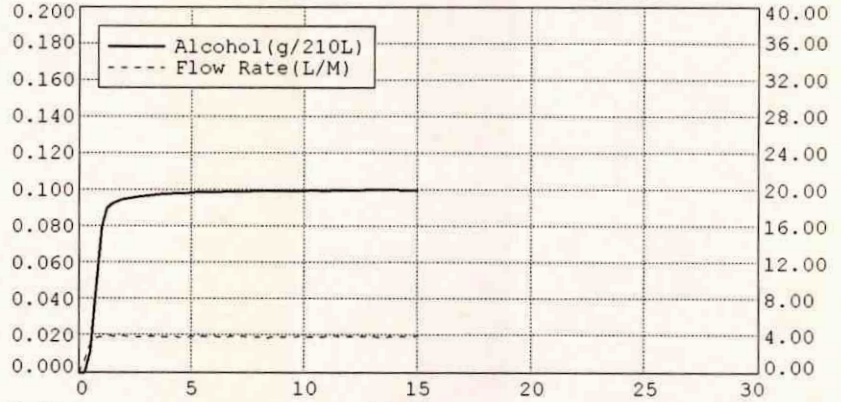
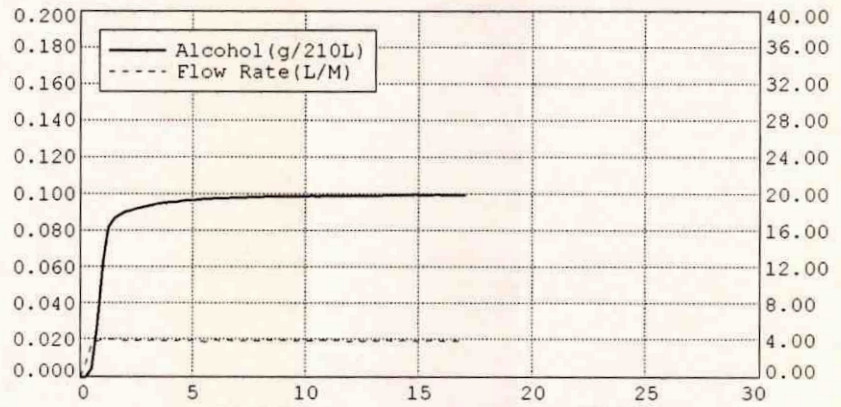
SUPERVISOR NAME: *Daw*
 CARLIE BAILEY
 OPERATOR'S #: 10436

EXTERNAL STANDARD INFORMATION
 NOMINAL: 0.100

BLANK TEST	0.000	14:29
INTERNAL STANDARD	VERIFIED	14:29
EXTERNAL STANDARD	0.100	14:30
BLANK TEST	0.000	14:31
EXTERNAL STANDARD	0.100	14:31
BLANK TEST	0.000	14:32
EXTERNAL STANDARD	0.101	14:32
BLANK TEST	0.000	14:33
EXTERNAL STANDARD	0.101	14:34
BLANK TEST	0.000	14:34
EXTERNAL STANDARD	0.101	14:35
BLANK TEST	0.000	14:36

Average = 0.1006
 Std Dev = 0.0005

*Simulator S/N: DR41163
 Calibrated: 11/17/2020
 Solution
 Lifeloc Lot 21DP41158
 Exp - 04/29/2023
 Daw*



SUPERVISOR TEST

Alaska Department of Public Safety
DATAMASTER dmt: 100384

Date: 05/13/2021
Time: 15:23:00

SUPERVISOR NAME: *DJW*
CARLIE BAILEY
OPERATOR'S #: 10436

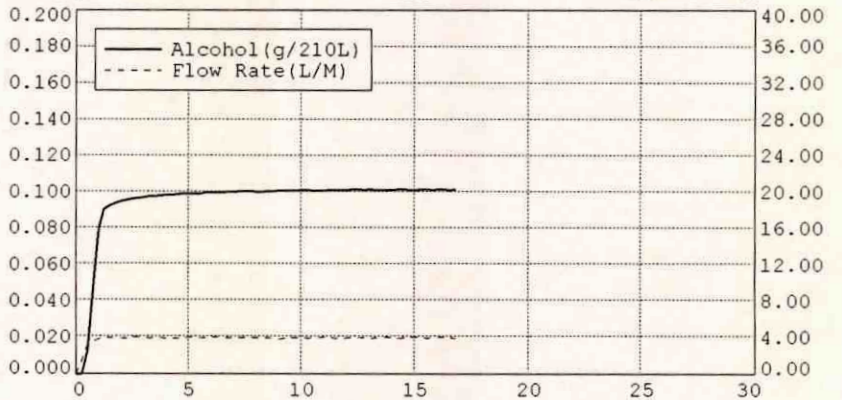
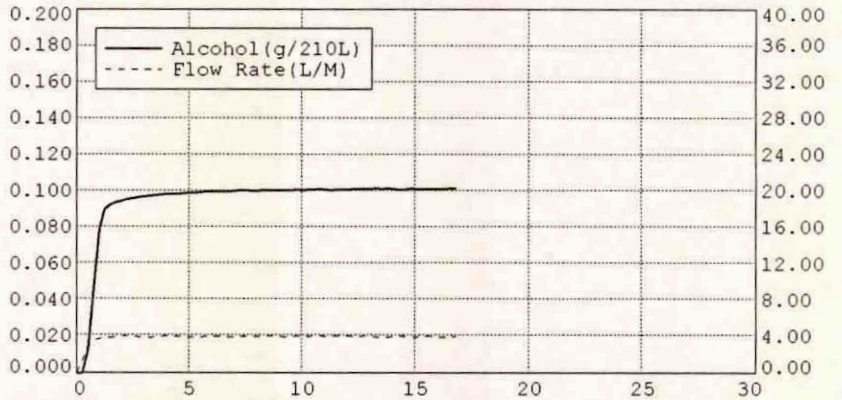
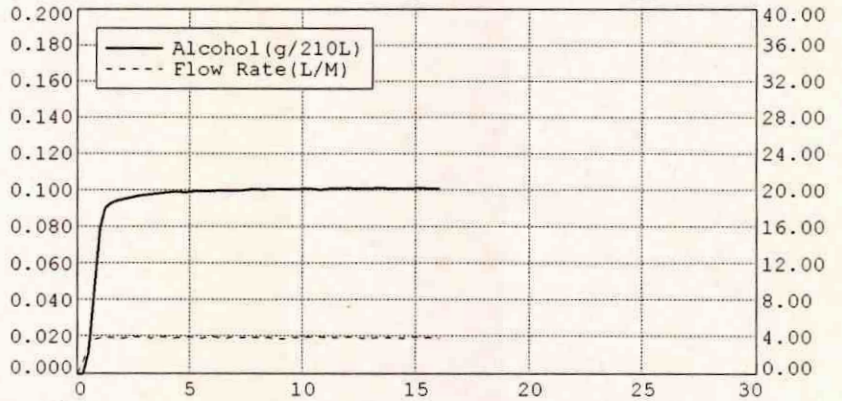
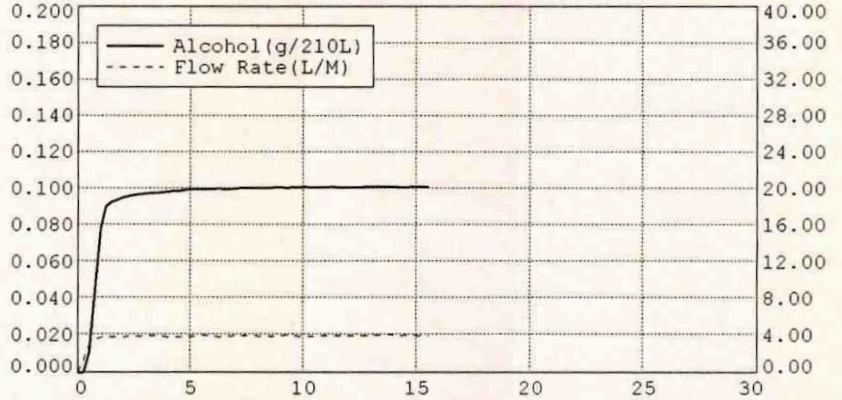
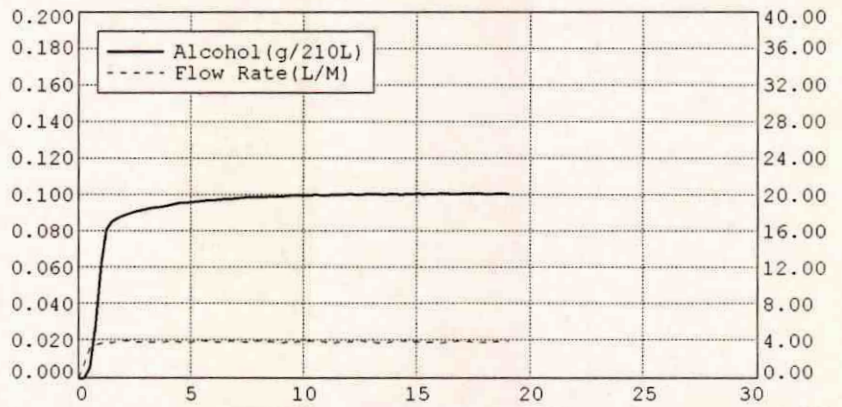
EXTERNAL STANDARD INFORMATION
NOMINAL: 0.100

BLANK TEST	0.000	15:25
INTERNAL STANDARD	VERIFIED	15:25
EXTERNAL STANDARD	0.102	15:25
BLANK TEST	0.000	15:26
EXTERNAL STANDARD	0.102	15:26
BLANK TEST	0.000	15:27
EXTERNAL STANDARD	0.103	15:28
BLANK TEST	0.000	15:29
EXTERNAL STANDARD	0.103	15:29
BLANK TEST	0.000	15:30
EXTERNAL STANDARD	0.103	15:30
BLANK TEST	0.000	15:31

Average = 0.1026
Std Dev = 0.0005

Simulator S/N: DR41163
Calibrated: 11/17/2020
Solution:
Lifeloc Lot 21DP41158
Exp: 4/29/2023

DJW



DIAGNOSTIC RECORD

Alaska Department of Public Safety
DATAMASTER dmt: 100405

Date: 05/13/2021
Time: 12:44:24

VERSIONS
DMT: 3.02
PIC: 3.02
Modem: 2.6
Questions: 2.2

TEMPERATURES

Sample Chamber = 48.8°C PASSED
(44.0°C - 52.0°C)
Breath Tube = 47.5°C PASSED
(38.0°C - 50.0°C)

SETTINGS

Lamp Voltage = 1.72 V PASSED
(1.01 V - 2.37 V)
Cooler Voltage = 1.66 V PASSED
(1.01 V - 2.37 V)
Bias Voltage = 81 V PASSED
(49 V - 113 V)
Chopper Freq = 527 Hz PASSED
(475 Hz - 575 Hz)
Barometer = 29.9 in

PUMP INFO

Flow Rate = 5.171 L/M PASSED
(3.500 L/M - 6.500 L/M)

DETECTOR INFO

PUMP ON PASSED
(0.002 V <= 0.010 V)
PUMP OFF PASSED
(0.002 V <= 0.010 V)

FILTER INFO

Filter 1 PASSED
Filter 2 PASSED
Filter 3 PASSED

INTERNAL STANDARD

Xq = 0.088 0.20% (0.00% - 4.00%) PASSED

In house instrument QA

MLB 5/17/2021

DW

Technician Screen

DATAMASTER dmt: 100405

Date: 05/13/2021
Time: 12:54 PM

Temperatures (°C)

Sample Cell: 48.9°C
Breath Tube: 47.2°C

Current Barometer 29.8 in
Volume (Ltr) 0.00

Settings

Lamp: 1.72 V
Bias: 81 V
Cooler: 1.76 V
Chopper: 525 Hz

Voltages (V)

Flow: 1.05 V
Detector: 0.034 V

LINEARITY CHECK

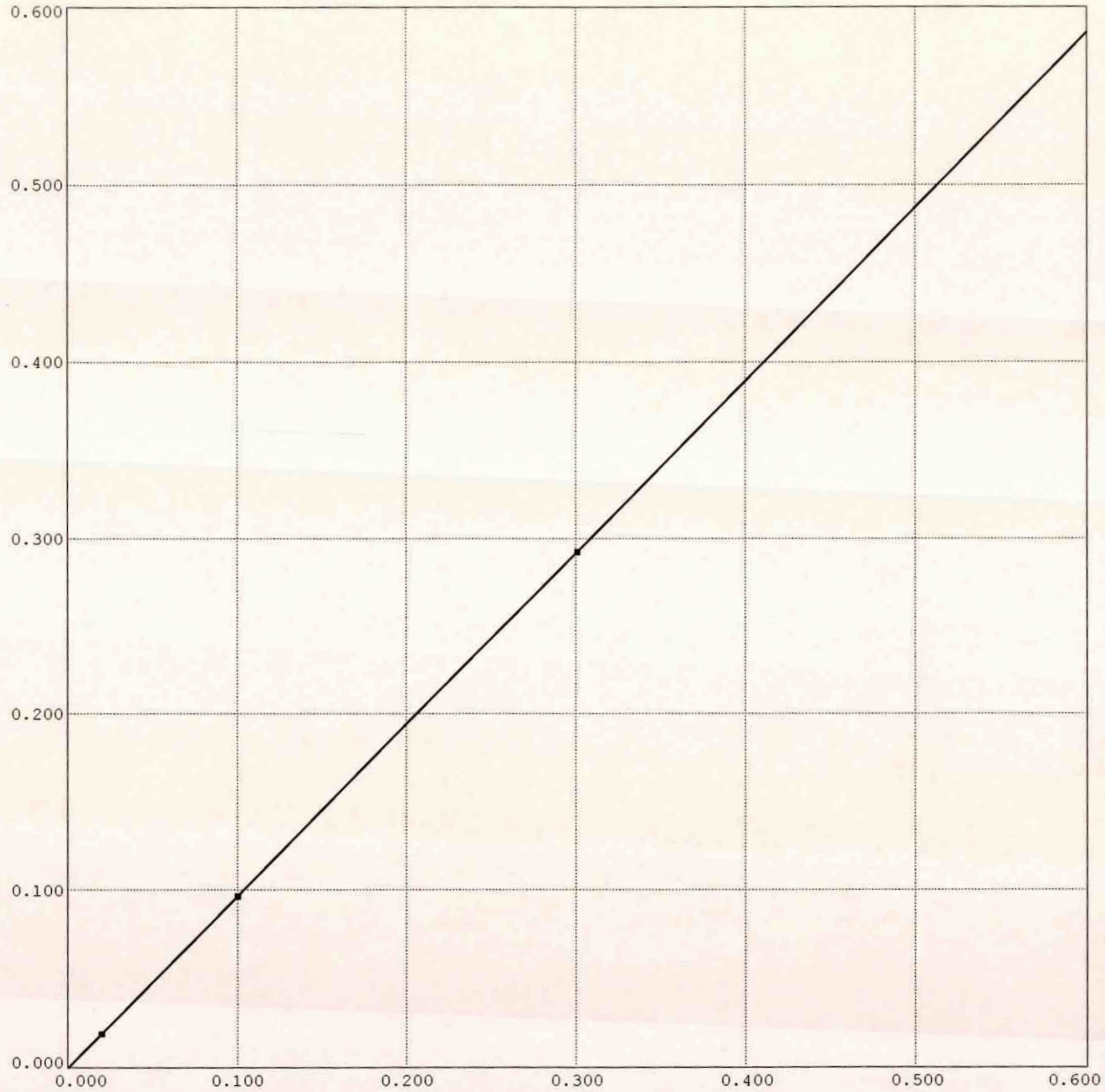
Alaska Department of Public Safety
DATAMASTER dmt: 100405

Date: 05/13/2021
Time: 13:02:26

SUPERVISOR NAME:
DEREK WALTON
OPERATOR'S #: 9508

TARGET	AVERAGE	STD. DEV.
0.020	0.0194	0.0005
0.100	0.0972	0.0004
0.300	0.2930	0.0007

SLOPE = 0.977500
R² = 0.999998



DM

LINEARITY CHECK: Control Test 1

Alaska Department of Public Safety
 DATAMASTER dmt: 100405

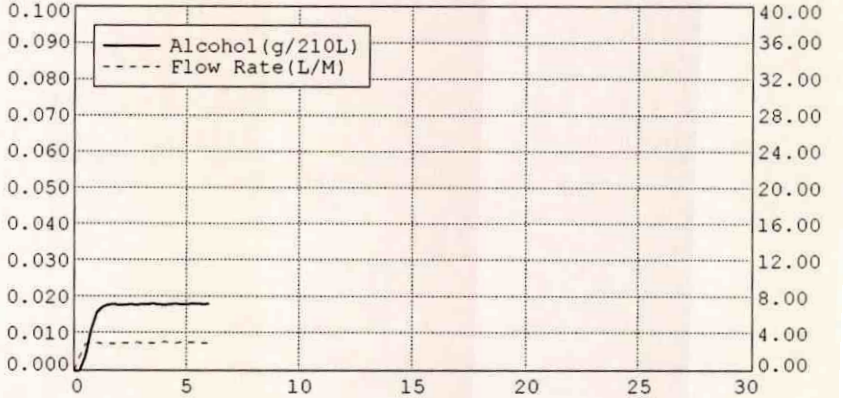
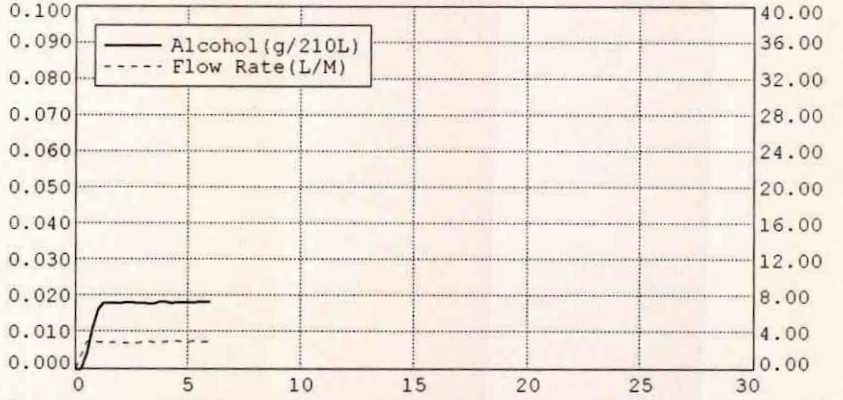
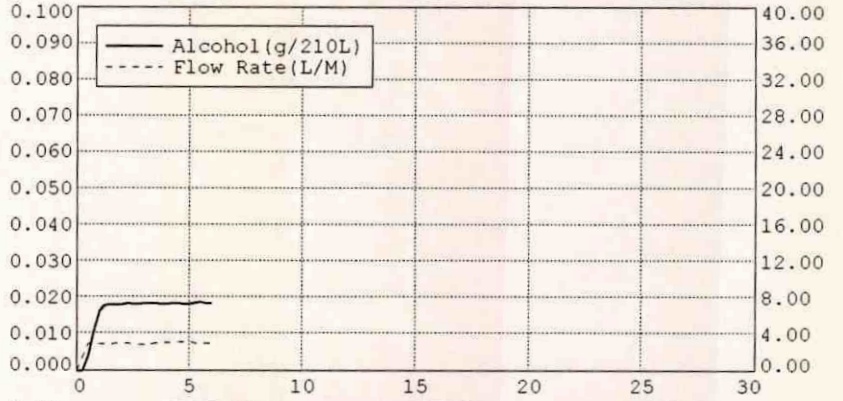
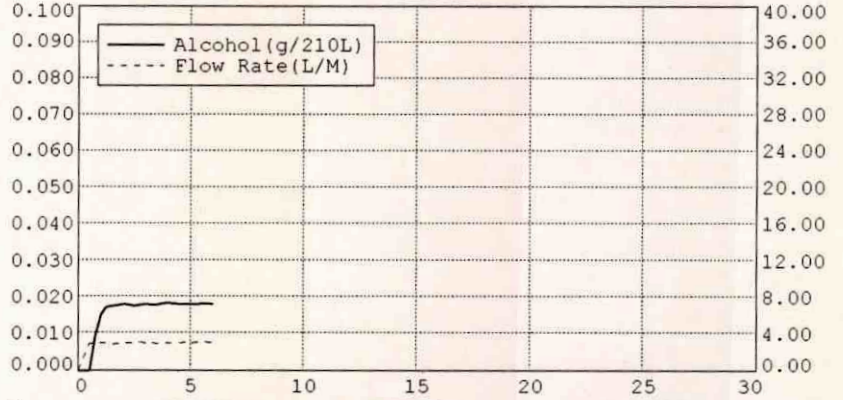
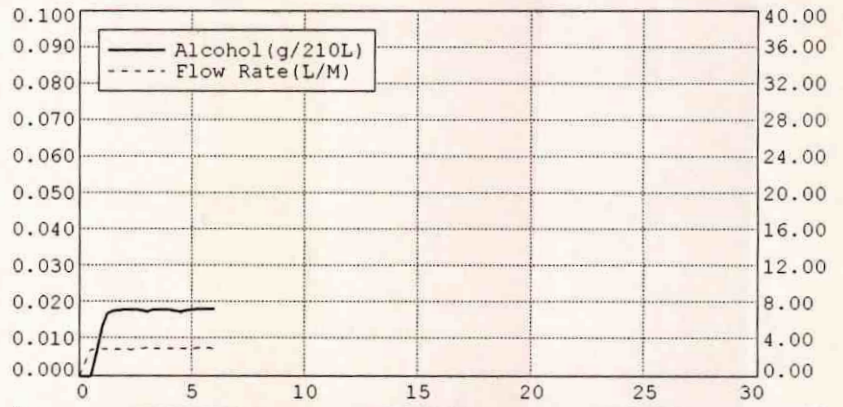
Date: 05/13/2021
 Time: 13:02:28

EXTERNAL STANDARD INFORMATION

NOMINAL: 0.020
 TARGET AT 29.85: 0.020
 LOT #: AG928203
 EXPIRATION: 10/09/2021
 TANK PRESSURE: 525 psi

BLANK TEST	0.000	13:04
INTERNAL STANDARD	VERIFIED	13:04
EXTERNAL STANDARD	0.019	13:04
BLANK TEST	0.000	13:05
EXTERNAL STANDARD	0.019	13:05
BLANK TEST	0.000	13:06
EXTERNAL STANDARD	0.020	13:06
BLANK TEST	0.000	13:07
EXTERNAL STANDARD	0.020	13:07
BLANK TEST	0.000	13:08
EXTERNAL STANDARD	0.019	13:08
BLANK TEST	0.000	13:09

Average = 0.0194
 Std Dev = 0.0005



LINEARITY CHECK: Control Test 2

Alaska Department of Public Safety
 DATAMASTER dmt: 100405

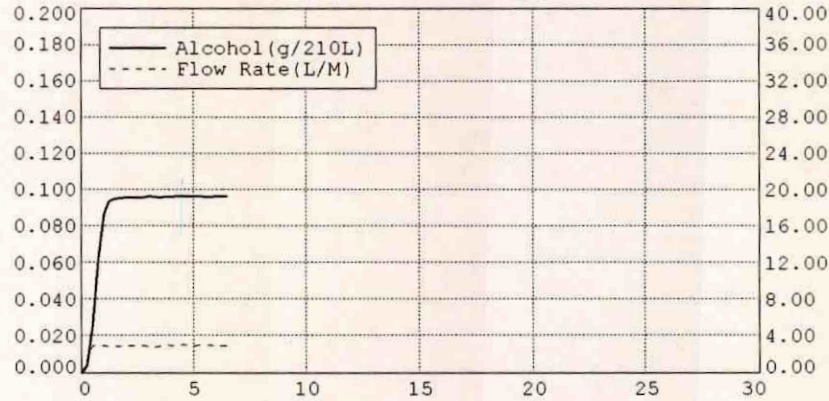
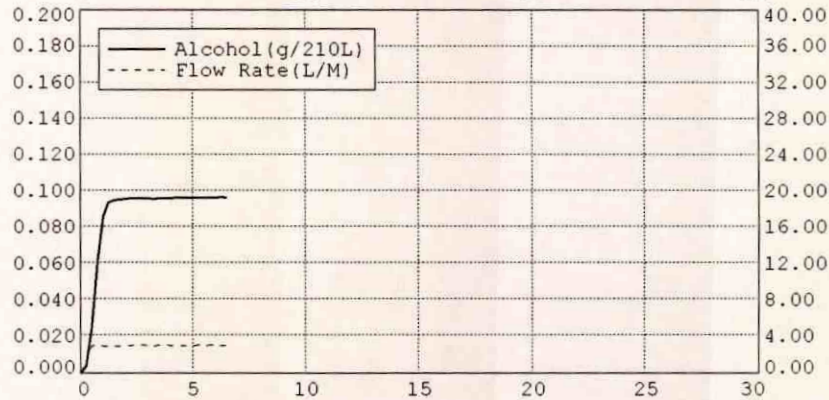
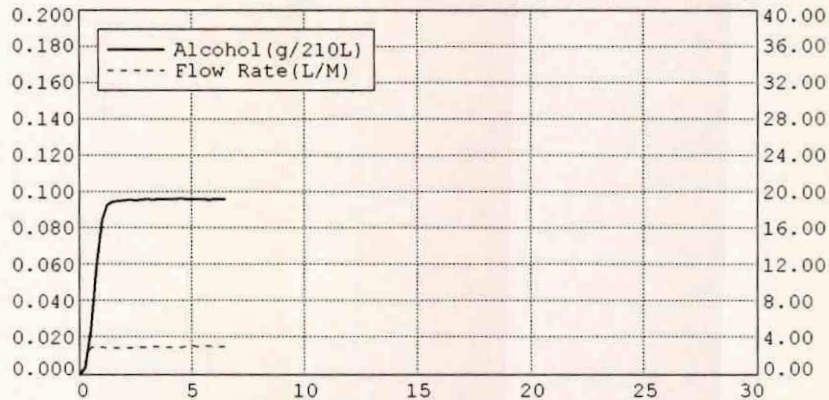
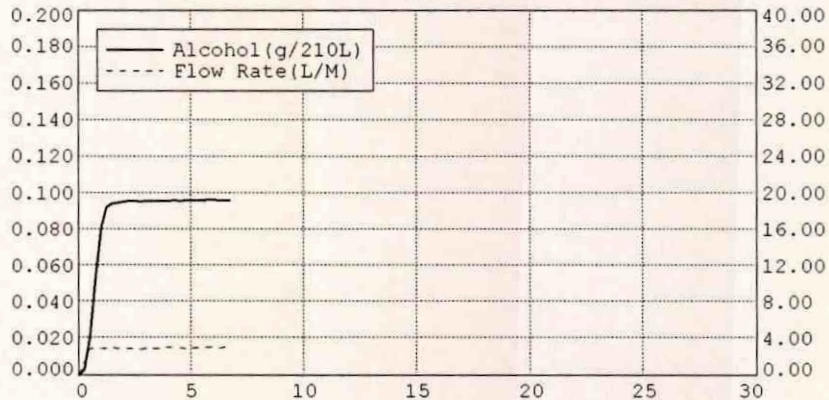
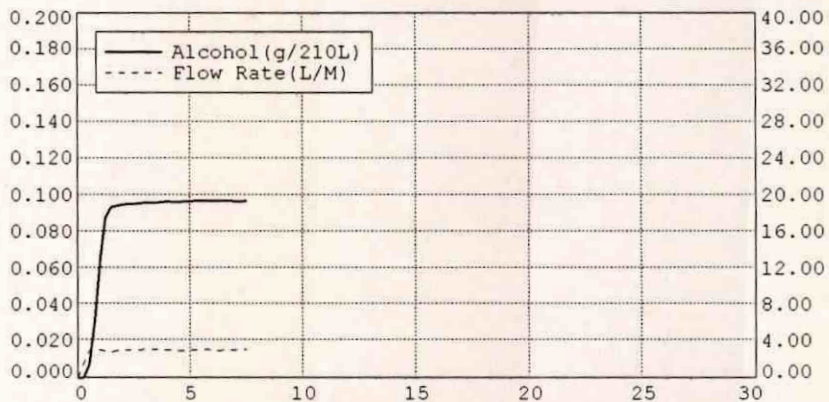
Date: 05/13/2021
 Time: 13:10:33

EXTERNAL STANDARD INFORMATION

NOMINAL: 0.100
 TARGET AT 29.86: 0.100
 LOT #: AG924701
 EXPIRATION: 09/04/2021
 TANK PRESSURE: 558 psi

BLANK TEST	0.000	13:12
INTERNAL STANDARD	VERIFIED	13:12
EXTERNAL STANDARD	0.098	13:12
BLANK TEST	0.000	13:13
EXTERNAL STANDARD	0.097	13:13
BLANK TEST	0.000	13:14
EXTERNAL STANDARD	0.097	13:14
BLANK TEST	0.000	13:15
EXTERNAL STANDARD	0.097	13:15
BLANK TEST	0.000	13:16
EXTERNAL STANDARD	0.097	13:16
BLANK TEST	0.000	13:17

Average = 0.0972
 Std Dev = 0.0004



LINEARITY CHECK: Control Test 3

Alaska Department of Public Safety
 DATAMASTER dmt: 100405

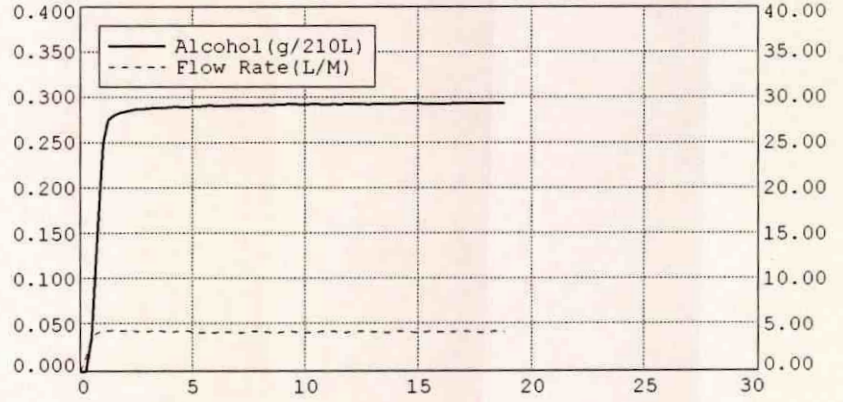
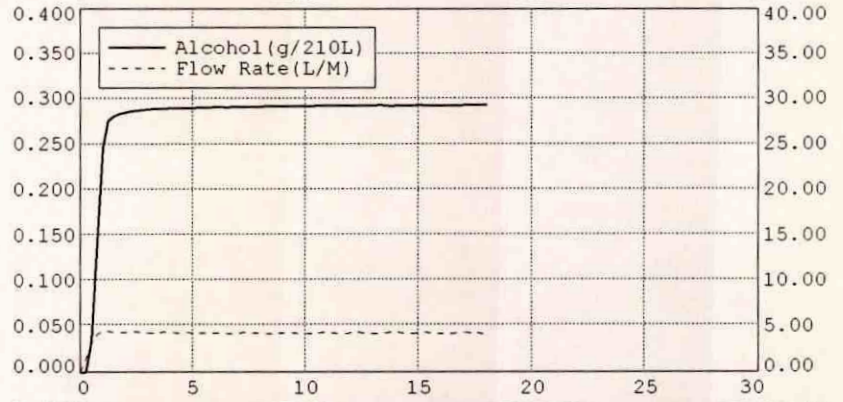
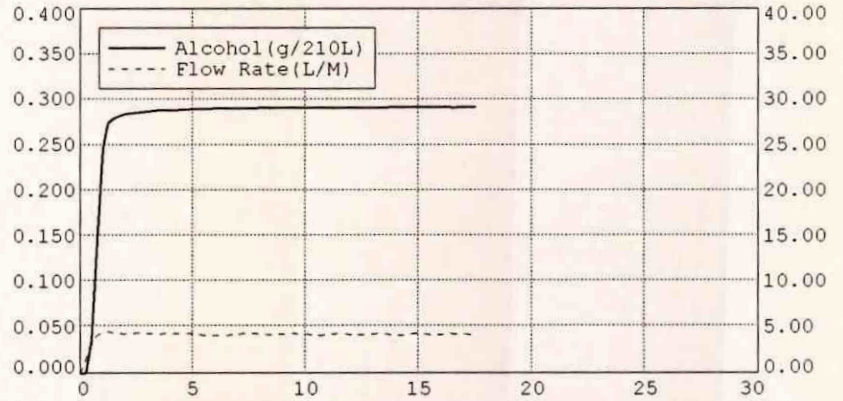
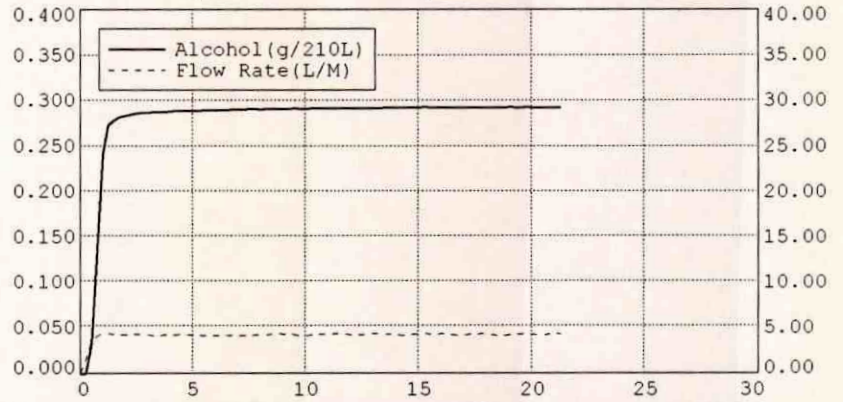
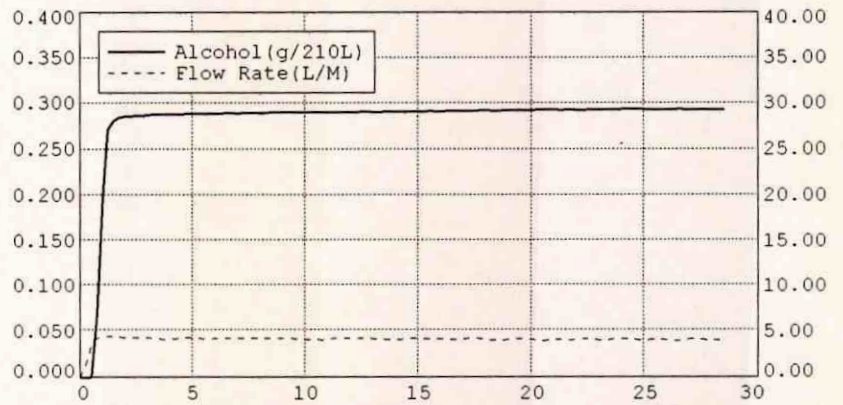
Date: 05/13/2021
 Time: 13:18:17

EXTERNAL STANDARD INFORMATION
 NOMINAL: 0.300
 LOT #: 19330
 EXPIRATION: 11/13/2021

BLANK TEST	0.000	13:20
INTERNAL STANDARD	VERIFIED	13:20
EXTERNAL STANDARD	0.293	13:21
BLANK TEST	0.000	13:22
EXTERNAL STANDARD	0.293	13:22
BLANK TEST	0.000	13:23
EXTERNAL STANDARD	0.292	13:24
BLANK TEST	0.000	13:24
EXTERNAL STANDARD	0.293	13:25
BLANK TEST	0.000	13:26
EXTERNAL STANDARD	0.294	13:26
BLANK TEST	0.000	13:27

Average = 0.2930
 Std Dev = 0.0007

Simulator S/N: DR4177
Calibrated: 11/17/2020
CLB 5/17/2021
Daw



DIAGNOSTIC RECORD

Alaska Department of Public Safety
DATAMASTER dmt: 100671

Date: 05/13/2021
Time: 13:14:59

VERSIONS
DMT: 3.02
PIC: 3.03
Modem: 2.6
Questions: 2.2

TEMPERATURES

Sample Chamber = 48.9°C PASSED
(44.0°C - 52.0°C)
Breath Tube = 47.8°C PASSED
(38.0°C - 50.0°C)

SETTINGS

Lamp Voltage = 1.67 V PASSED
(1.01 V - 2.37 V)
Cooler Voltage = 1.76 V PASSED
(1.00 V - 2.32 V)
Bias Voltage = 79 V PASSED
(47 V - 111 V)
Chopper Freq = 544 Hz PASSED
(475 Hz - 575 Hz)
Barometer = 29.9 in

PUMP INFO

Flow Rate = 4.827 L/M PASSED
(3.500 L/M - 6.500 L/M)

DETECTOR INFO

PUMP ON PASSED
(0.002 V <= 0.010 V)
PUMP OFF PASSED
(0.003 V <= 0.010 V)

FILTER INFO

Filter 1 PASSED
Filter 2 PASSED
Filter 3 PASSED

INTERNAL STANDARD

Xq = 0.101 2.40% (0.00% - 4.00%) PASSED

Technician Screen

DATAMASTER dmt: 100671

Date: 05/13/2021
Time: 1:24 PM

Temperatures (°C)

Sample Cell: 48.9°C
Breath Tube: 47.8°C

Current Barometer 29.8 in
Volume (Ltr) 0.00

Settings

Lamp: 1.69 V
Bias: 79 V
Cooler: 1.81 V
Chopper: 541 Hz

Voltages (V)

Flow: 1.07 V
Detector: -0.010 V

LINEARITY CHECK

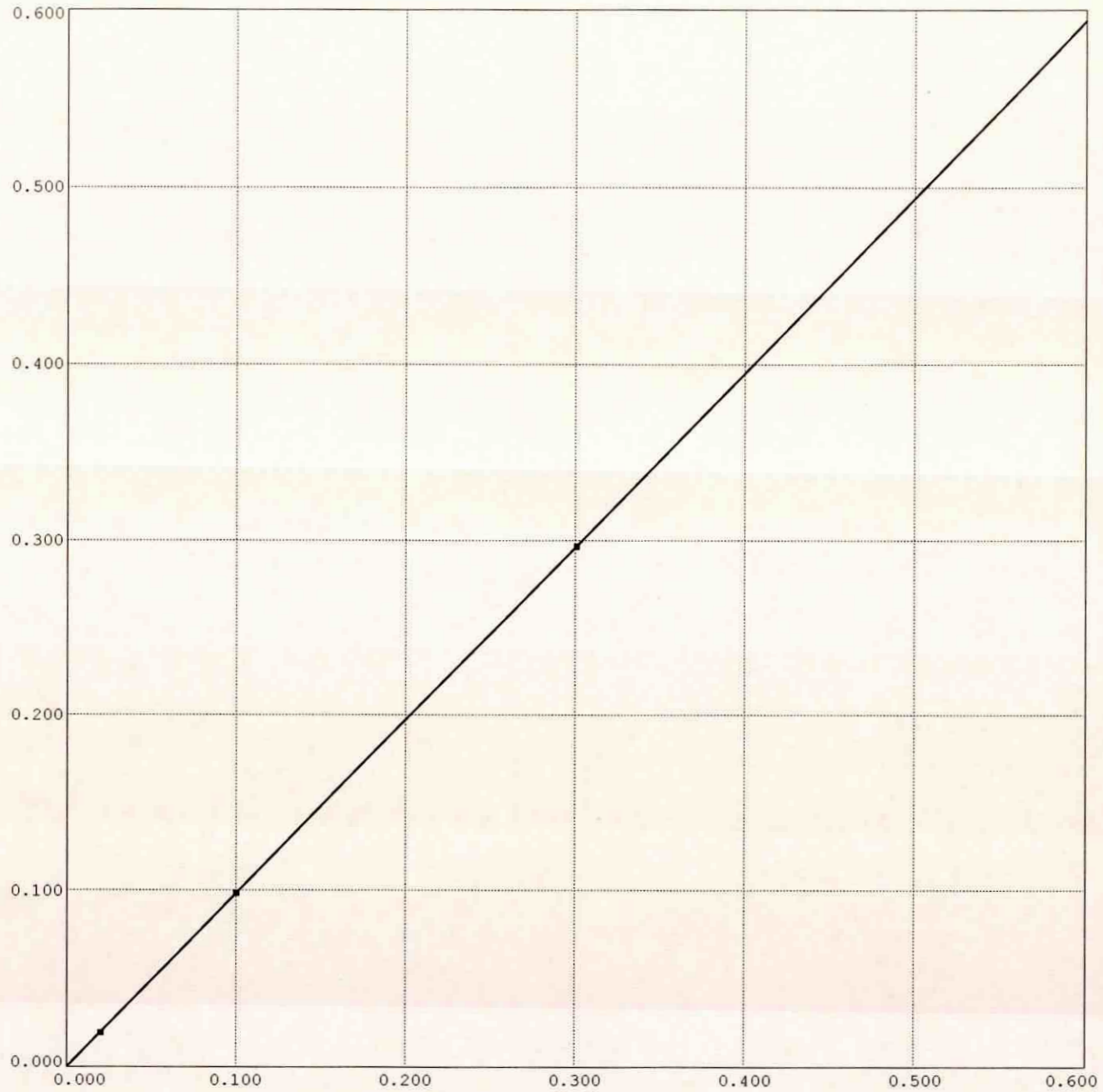
Alaska Department of Public Safety
DATAMASTER dmt: 100671

Date: 05/13/2021
Time: 13:34:47

SUPERVISOR NAME:
DEREK WALTON
OPERATOR'S #: 9508

TARGET	AVERAGE	STD. DEV.
0.020	0.0200	0.0000
0.100	0.0994	0.0005
0.300	0.2972	0.0011

SLOPE = 0.989808
R² = 0.999999



CKB
DW

LINEARITY CHECK: Control Test 1

Alaska Department of Public Safety
 DATAMASTER dmt: 100671

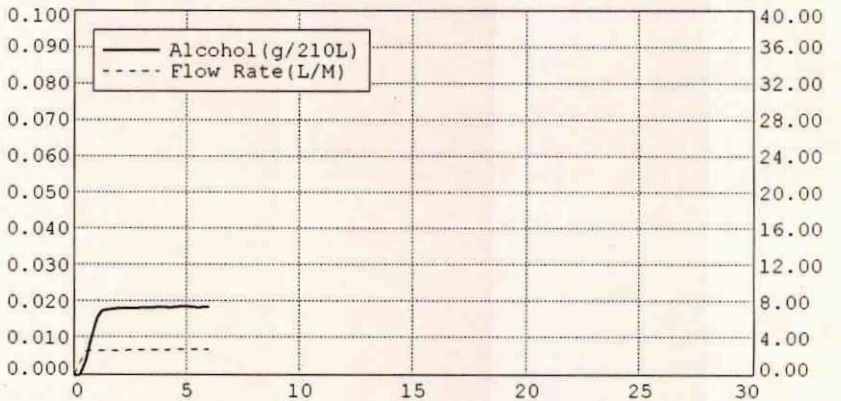
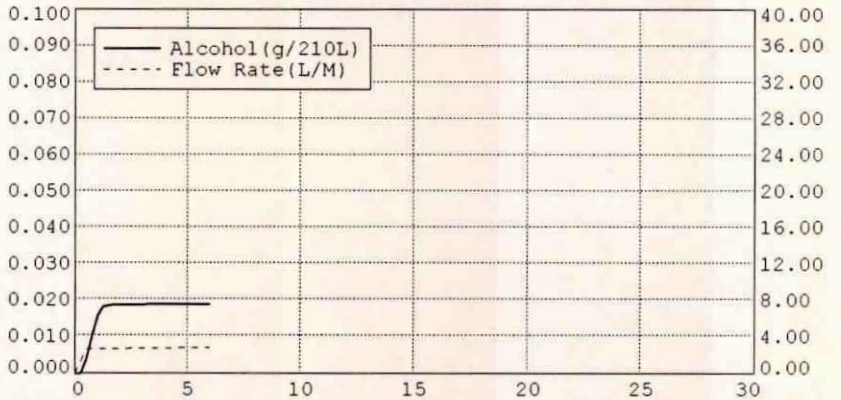
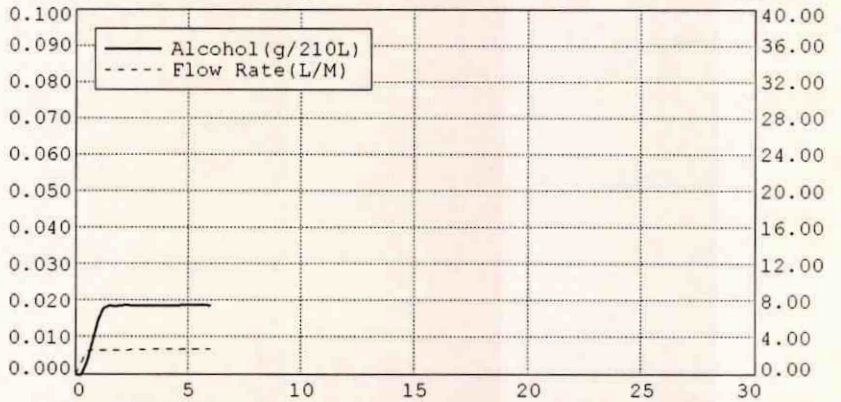
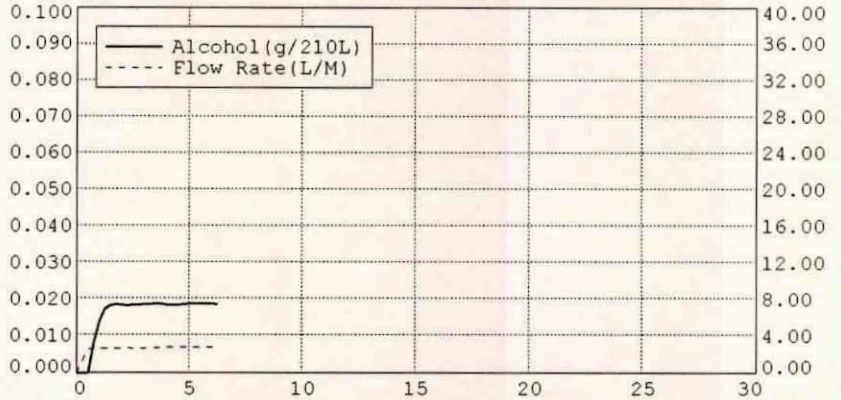
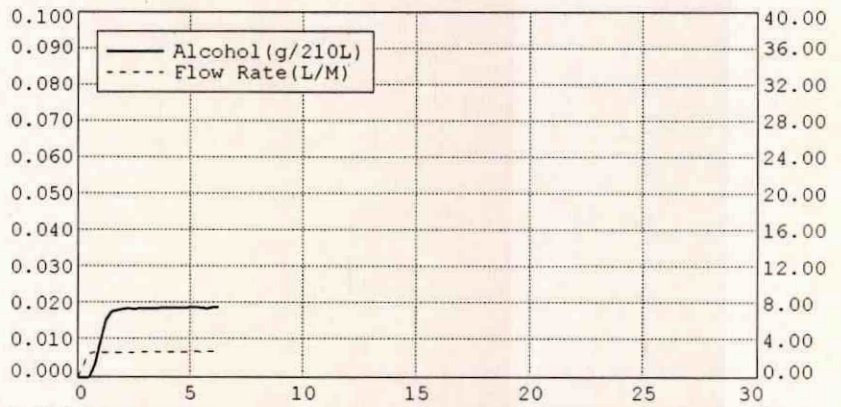
Date: 05/13/2021
 Time: 13:34:49

EXTERNAL STANDARD INFORMATION

NOMINAL: 0.020
 TARGET AT 29.84: 0.020
 LOT #: AG928203
 EXPIRATION: 10/09/2021
 TANK PRESSURE: 544 psi

BLANK TEST	0.000	13:36
INTERNAL STANDARD	VERIFIED	13:36
EXTERNAL STANDARD	0.020	13:36
BLANK TEST	0.000	13:37
EXTERNAL STANDARD	0.020	13:37
BLANK TEST	0.000	13:38
EXTERNAL STANDARD	0.020	13:38
BLANK TEST	0.000	13:39
EXTERNAL STANDARD	0.020	13:39
BLANK TEST	0.000	13:40
EXTERNAL STANDARD	0.020	13:40
BLANK TEST	0.000	13:41

Average = 0.0200
 Std Dev = 0.0000



LINEARITY CHECK: Control Test 2

Alaska Department of Public Safety
 DATAMASTER dmt: 100671

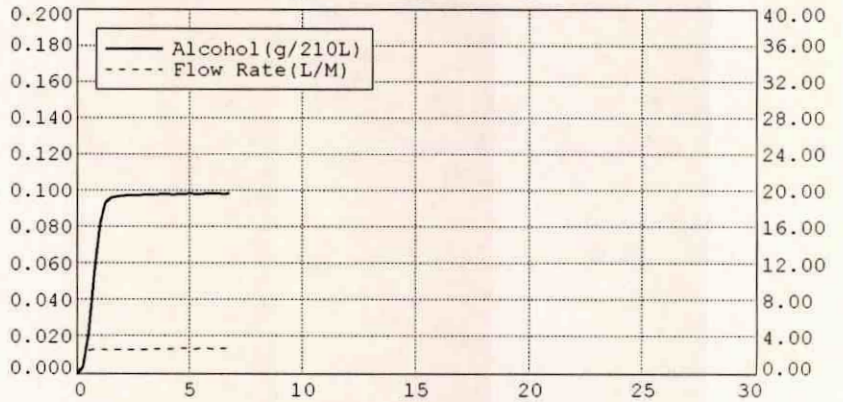
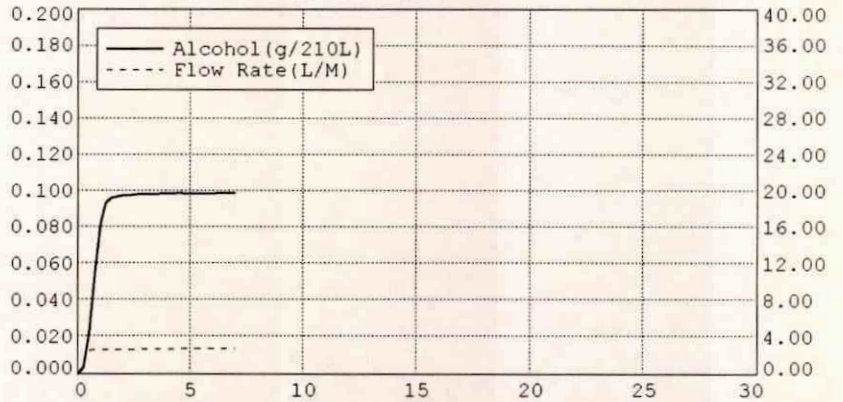
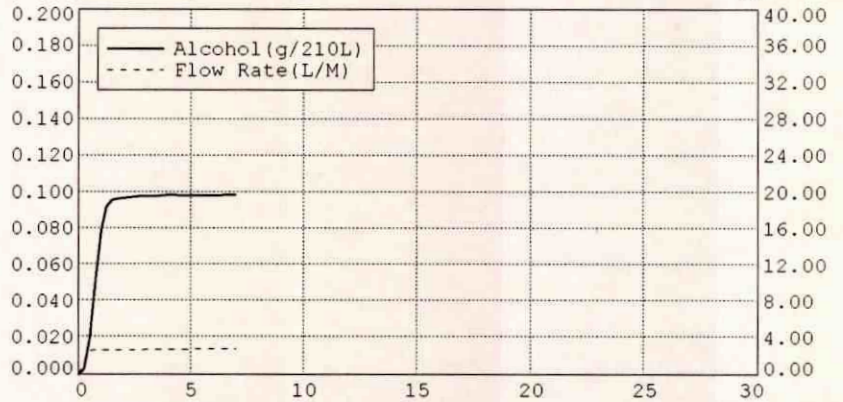
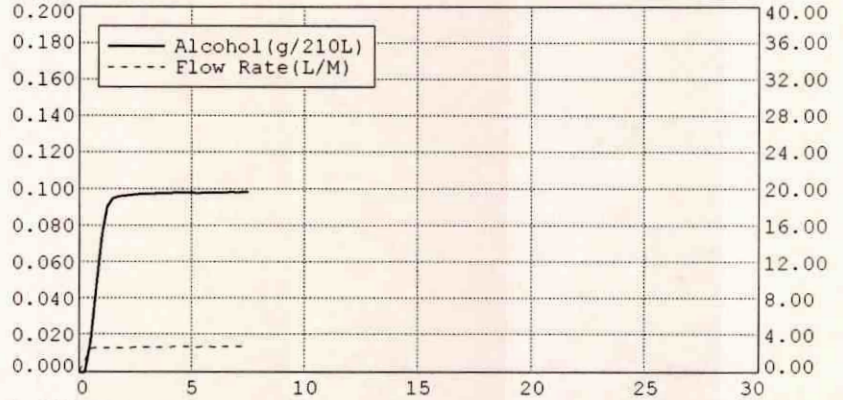
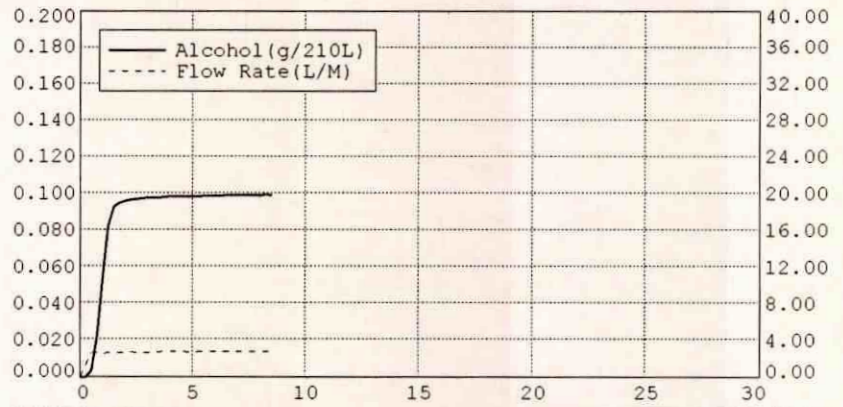
Date: 05/13/2021
 Time: 13:42:06

EXTERNAL STANDARD INFORMATION

NOMINAL: 0.100
 TARGET AT 29.83: 0.100
 LOT #: AG924701
 EXPIRATION: 09/04/2021
 TANK PRESSURE: 560 psi

BLANK TEST	0.000	13:51
INTERNAL STANDARD	VERIFIED	13:51
EXTERNAL STANDARD	0.100	13:51
BLANK TEST	0.000	13:52
EXTERNAL STANDARD	0.099	13:52
BLANK TEST	0.000	13:53
EXTERNAL STANDARD	0.099	13:53
BLANK TEST	0.000	13:54
EXTERNAL STANDARD	0.100	13:54
BLANK TEST	0.000	13:55
EXTERNAL STANDARD	0.099	13:56
BLANK TEST	0.000	13:57

Average = 0.0994
 Std Dev = 0.0005



LINEARITY CHECK: Control Test 3

Alaska Department of Public Safety
 DATAMASTER dmt: 100671

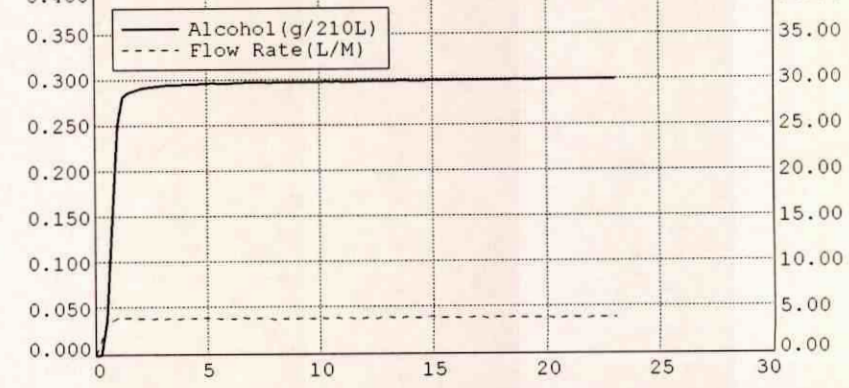
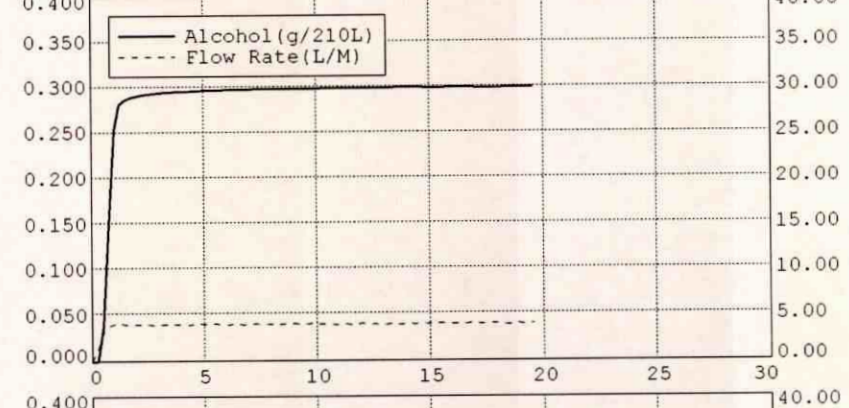
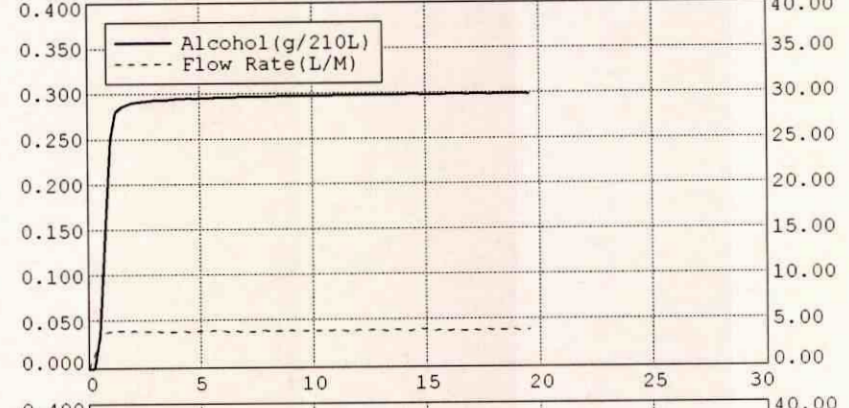
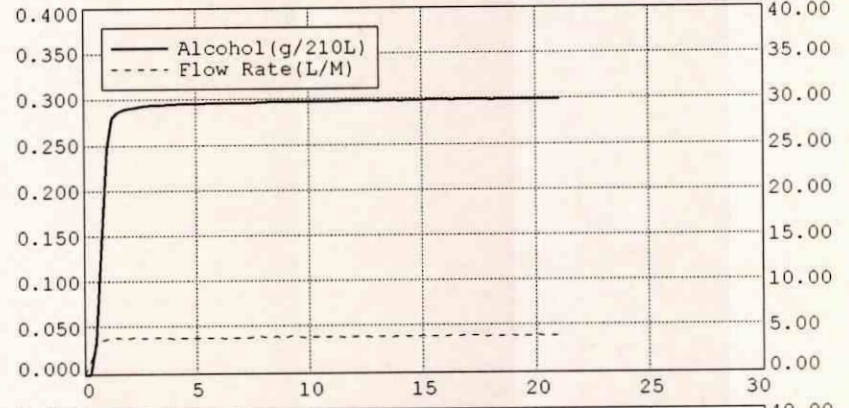
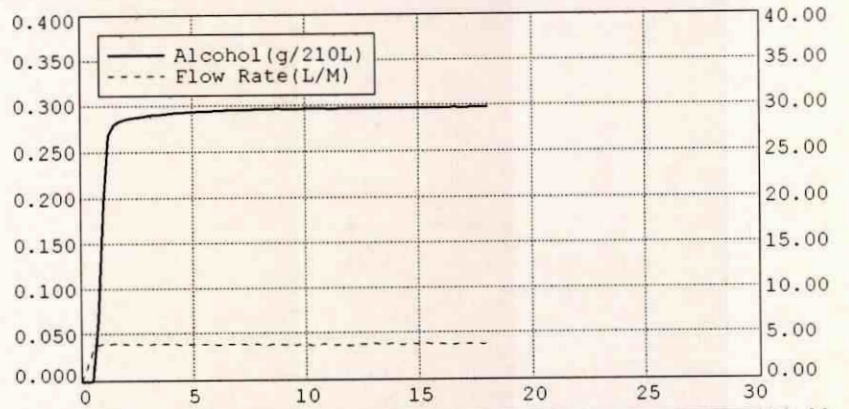
Date: 05/13/2021
 Time: 14:00:39

EXTERNAL STANDARD INFORMATION
 NOMINAL: 0.300
 LOT #: 19330
 EXPIRATION: 11/13/2021

BLANK TEST	0.000	14:01
INTERNAL STANDARD	VERIFIED	14:01
EXTERNAL STANDARD	0.296	14:02
BLANK TEST	0.000	14:03
EXTERNAL STANDARD	0.297	14:03
BLANK TEST	0.000	14:04
EXTERNAL STANDARD	0.297	14:05
BLANK TEST	0.000	14:05
EXTERNAL STANDARD	0.297	14:06
BLANK TEST	0.000	14:07
EXTERNAL STANDARD	0.299	14:07
BLANK TEST	0.000	14:08

Average = 0.2972
 Std Dev = 0.0011

Simulator S/N: DR477
Calibrated: 11/17/2020
QUB DAW
5/17/2021



DIAGNOSTIC RECORD

Alaska Department of Public Safety
DATAMASTER dmt: 100384

Date: 05/13/2021
Time: 14:45:51

VERSIONS
DMT: 3.02
PIC: 3.03
Modem: 2.6
Questions: 2.2

TEMPERATURES

Sample Chamber = 48.9°C PASSED
(44.0°C - 52.0°C)
Breath Tube = 46.7°C PASSED
(38.0°C - 50.0°C)

SETTINGS

Lamp Voltage = 1.64 V PASSED
(1.02 V - 2.38 V)
Cooler Voltage = 1.76 V PASSED
(1.01 V - 2.35 V)
Bias Voltage = 80 V PASSED
(48 V - 112 V)
Chopper Freq = 527 Hz PASSED
(475 Hz - 575 Hz)
Barometer = 29.8 in

PUMP INFO

Flow Rate = 4.743 L/M PASSED
(3.500 L/M - 6.500 L/M)

DETECTOR INFO

PUMP ON PASSED
(0.002 V <= 0.010 V)
PUMP OFF PASSED
(0.002 V <= 0.010 V)

FILTER INFO

Filter 1 PASSED
Filter 2 PASSED
Filter 3 PASSED

INTERNAL STANDARD

Xq = 0.089 1.89% (0.00% - 4.00%) PASSED

Technician Screen

DATAMASTER dmt: 100384

Date: 05/13/2021
Time: 2:48 PM

Temperatures (°C)
Sample Cell: 49.0°C
Breath Tube: 46.9°C

Current Barometer 29.8 in
Volume (Ltr) 0.00

Settings
Lamp: 1.64 V
Bias: 80 V
Cooler: 1.76 V
Chopper: 527 Hz

Voltages (V)
Flow: 1.06 V
Detector: -0.045 V

LINEARITY CHECK

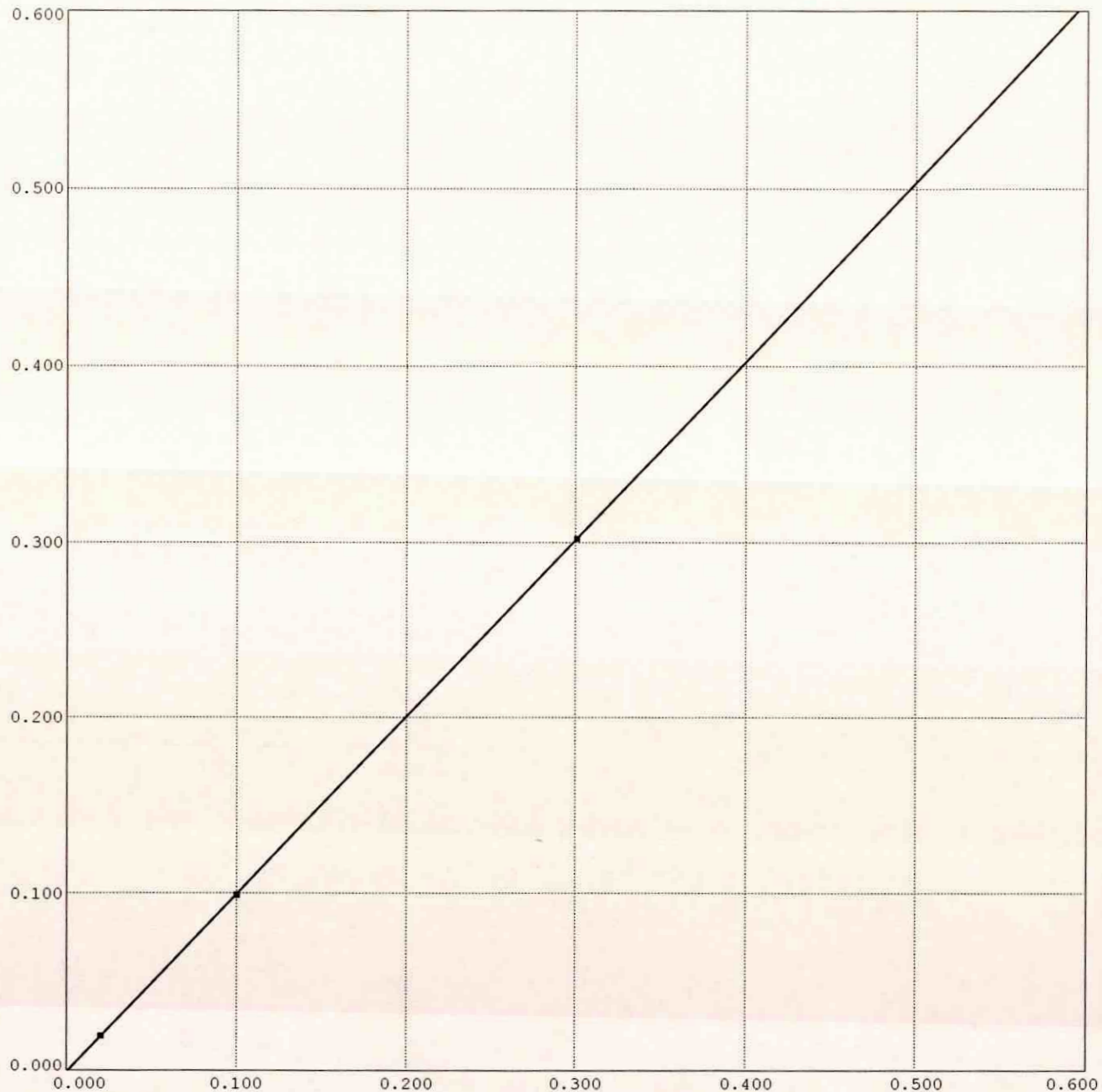
Alaska Department of Public Safety
DATAMASTER dmt: 100384

Date: 05/13/2021
Time: 14:51:08

SUPERVISOR NAME:
DEREK WALTON
OPERATOR'S #: 9508

TARGET	AVERAGE	STD. DEV.
0.020	0.0200	0.0000
0.100	0.1000	0.0000
0.300	0.3028	0.0004

SLOPE = 1.010769
R² = 0.999991



CWB DM

LINEARITY CHECK: Control Test 1

Alaska Department of Public Safety
 DATAMASTER dmt: 100384

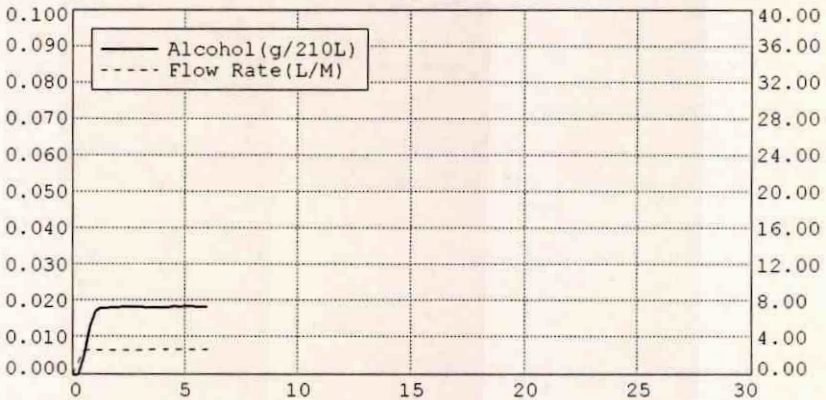
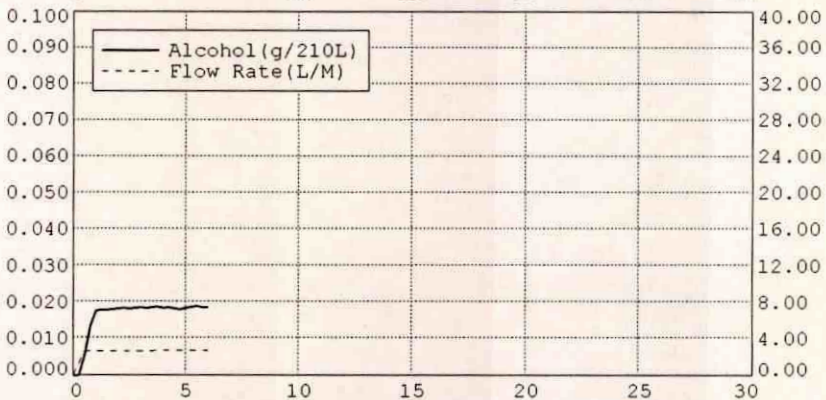
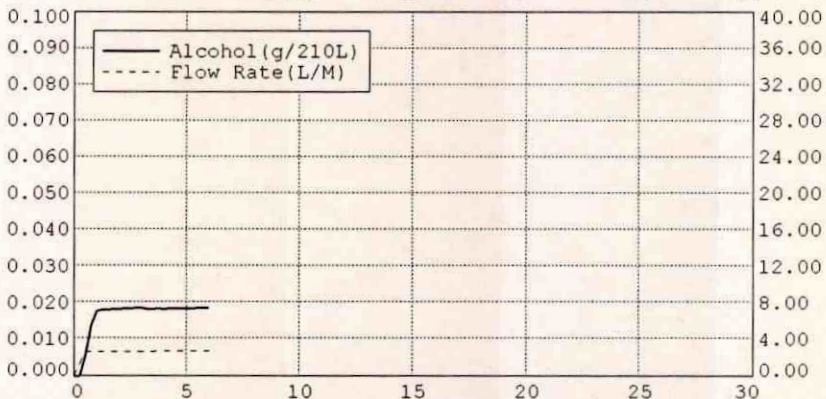
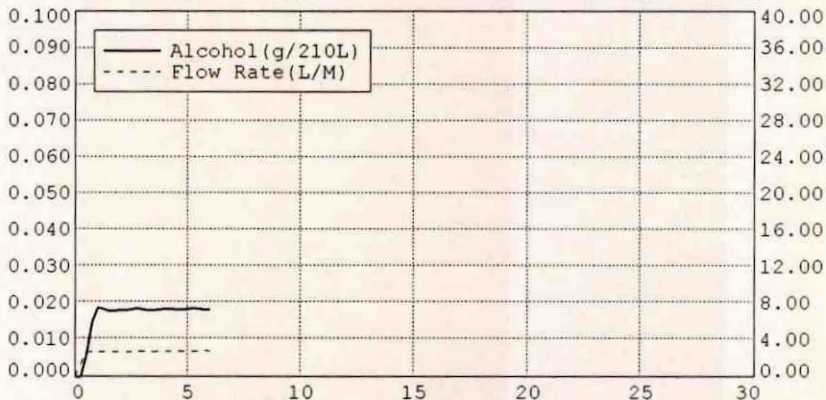
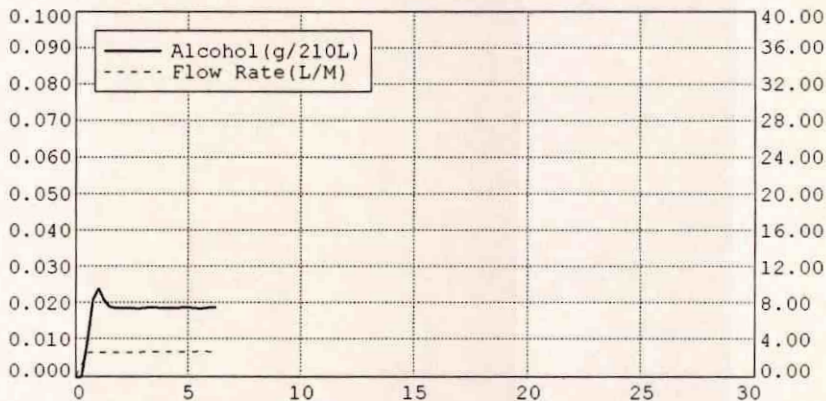
Date: 05/13/2021
 Time: 14:51:10

EXTERNAL STANDARD INFORMATION

NOMINAL: 0.020
 TARGET AT 29.82: 0.020
 LOT #: AG928203
 EXPIRATION: 10/09/2021
 TANK PRESSURE: 499 psi

BLANK TEST	0.000	14:52
INTERNAL STANDARD	VERIFIED	14:52
EXTERNAL STANDARD	0.020	14:52
BLANK TEST	0.000	14:53
EXTERNAL STANDARD	0.020	14:53
BLANK TEST	0.000	14:54
EXTERNAL STANDARD	0.020	14:55
BLANK TEST	0.000	14:55
EXTERNAL STANDARD	0.020	14:56
BLANK TEST	0.000	14:57
EXTERNAL STANDARD	0.020	14:57
BLANK TEST	0.000	14:58

Average = 0.0200
 Std Dev = 0.0000



LINEARITY CHECK: Control Test 2

Alaska Department of Public Safety
 DATAMASTER dmt: 100384

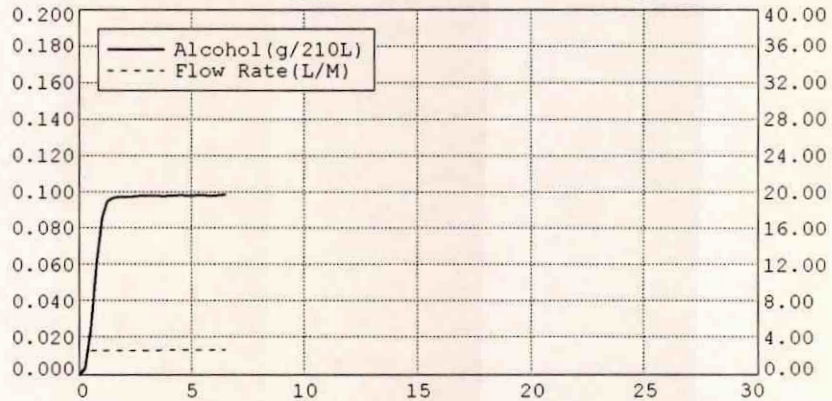
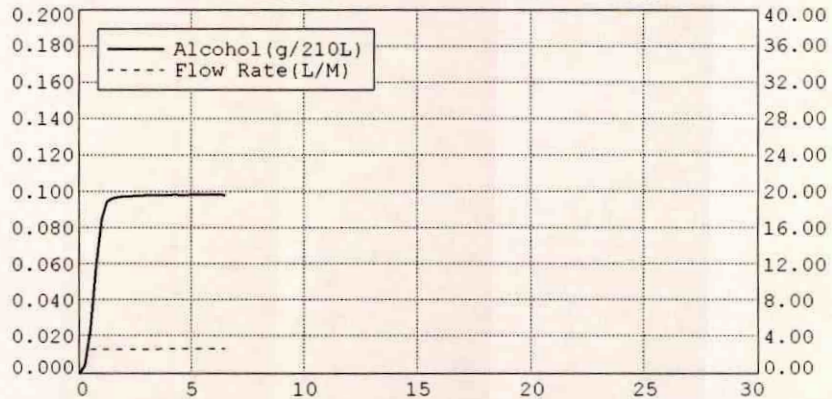
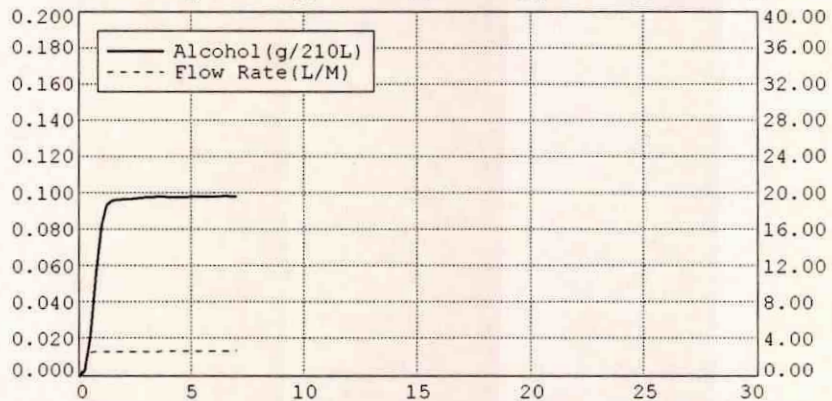
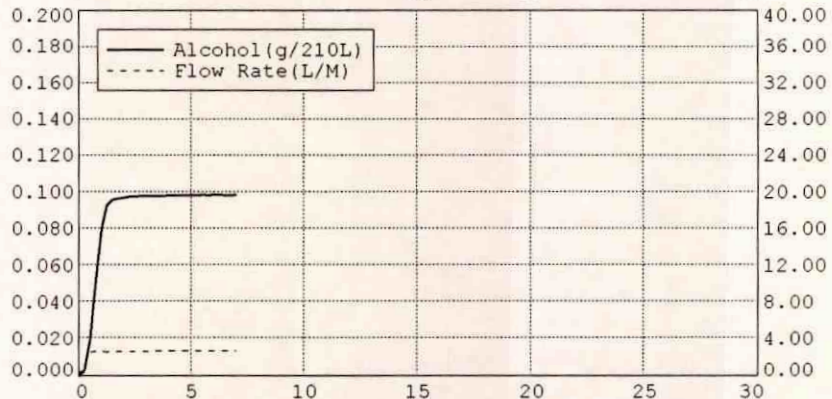
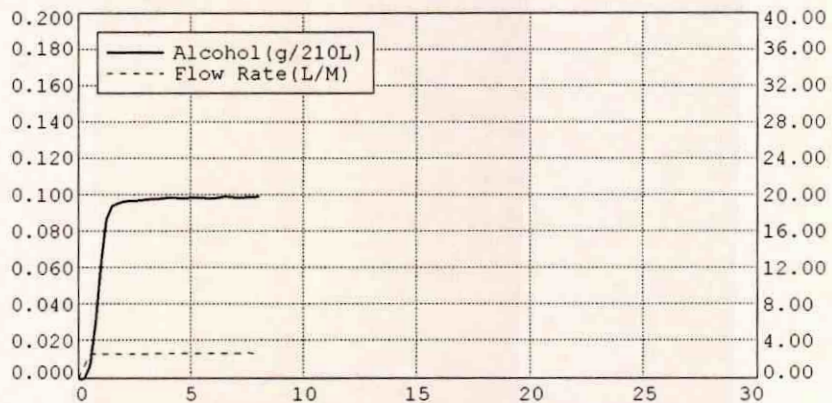
Date: 05/13/2021
 Time: 14:58:47

EXTERNAL STANDARD INFORMATION

NOMINAL: 0.100
 TARGET AT 29.81: 0.100
 LOT #: AG924701
 EXPIRATION: 09/04/2021
 TANK PRESSURE: 518 psi

BLANK TEST	0.000	15:00
INTERNAL STANDARD	VERIFIED	15:00
EXTERNAL STANDARD	0.100	15:00
BLANK TEST	0.000	15:01
EXTERNAL STANDARD	0.100	15:01
BLANK TEST	0.000	15:02
EXTERNAL STANDARD	0.100	15:02
BLANK TEST	0.000	15:03
EXTERNAL STANDARD	0.100	15:04
BLANK TEST	0.000	15:04
EXTERNAL STANDARD	0.100	15:05
BLANK TEST	0.000	15:06

Average = 0.1000
 Std Dev = 0.0000



LINEARITY CHECK: Control Test 3

Alaska Department of Public Safety
DATAMASTER dmt: 100384

Date: 05/13/2021
Time: 15:07:24

EXTERNAL STANDARD INFORMATION
NOMINAL: 0.300
LOT #: 19330
EXPIRATION: 11/13/2021

BLANK TEST	0.000	15:09
INTERNAL STANDARD	VERIFIED	15:09
EXTERNAL STANDARD	0.303	15:10
BLANK TEST	0.000	15:11
EXTERNAL STANDARD	0.303	15:11
BLANK TEST	0.000	15:12
EXTERNAL STANDARD	0.303	15:12
BLANK TEST	0.000	15:13
EXTERNAL STANDARD	0.302	15:14
BLANK TEST	0.000	15:15
EXTERNAL STANDARD	0.303	15:15
BLANK TEST	0.000	15:16

Average = 0.3028
Std Dev = 0.0004

*Simulator S/N: DR4177
Calibrated: 11/17/2020
CUB 5/17/2021
DAN*

