FUNDAMENTALS OF TRIAL ADVOCACY COURSE

September 30 – October 4, 2019
Phoenix, Arizona

DUI BLOOD ANALYSIS ISSUES

Presented by:

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Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL
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DUI Blood Analysis

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Blood Alcohol Analysis

General Alcohol

Absorption, Elimination, and Distribution
Impairment/Intoxication
Tolerance
Officer Tools – Driving Cues and SFSTs

Blood Alcohol

Blood Draw
Property and Evidence
Notes
Analysis
Quality Assurance

Alcohol

Common Types

NAME	FORMULA	BOILING POINT	USES	TOXICITY AND METABOLITES
Methanol	CH_3-OH	64.5°C / 148.1°F	Denaturant Solvent Paint Remover Fuel	≈ 75ML Formic Acid
Ethanol	CH_3CH_2-OH	78.3°C / 172.9°F	Beverage Solvent Medicinal Vehicle Fuel	≈ 400-500ML Acetaldehyde (Acetic Acid)
Isopropanol	CH_3CH-OH | CH_3	82.3°C / 180.1°F	Denaturant Antiseptic	≈ 250ML Acetone
Ethylene Glycol	CH_2-OH | CH_2-OH	198°C / 388.4°F	Coolant Solvent	≈ 100ML Oxalic Acid

Absorption

How does it enter the body?

Oral Consumption

Injection

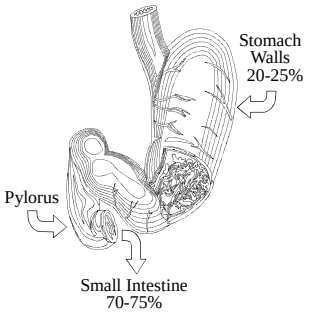
Inhalation

Through the skin

Enema

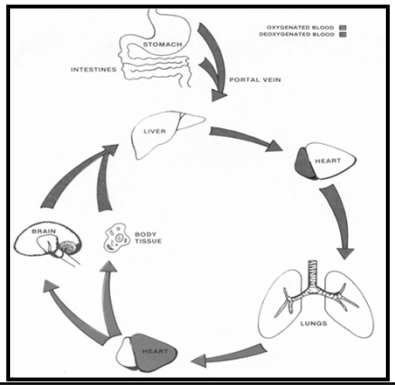
Absorption

How does ethanol enter the body?



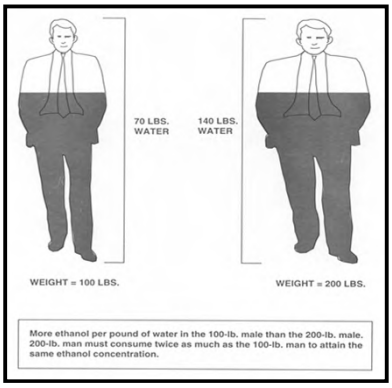
Distribution

How does ethanol move around in the body?



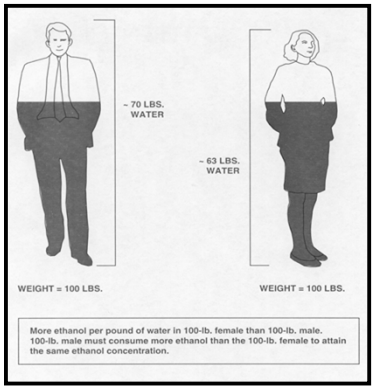
Distribution

Ethanol Concentration vs. Water Content



Distribution

Ethanol Concentration vs. Water Content



Per Drink Calculation

<u>Widmark Formula</u>

A = PRC

A = Alcohol (amount and concentration)
P = Weight
R = Widmark Number (water content)
C = BAC

Elimination

How does ethanol leave the body?

Metabolism (liver)

Excretion (urine)

Evaporation (breath)

Elimination

Metabolism

Rate at which ethanol is oxidized varies from one person to another

Elimination rates range from 0.010% to 0.030% per hour

Average rate of elimination is 0.018% per hour

Retrograde Calculation

Used if chemical test is outside two hours from the time of driving

Argument does not apply to (A)(1) or (A)(3)

State may retrograde readings to any time within two hours of driving/APC for per se statutes

Meets Rule 702 requirements.

O'Neill v. Superior Court, (*Kankelfritz*, RPI), 187 Ariz. 440 (App. 1996); *State v. Claybrook*, 193 Ariz. 588 (App. 1998); *State v. Montgomery*, **(*Madrid*, RPI) 234 Ariz. 289 (App. 2014).**

Retrograde Calculation

Practice pointer – be sure to disclose the forensic scientist you will call and his/her opinion re: retrograde.

State v. Roque, 213 Ariz. 193 (2006); Rule 15.

Retrograde Calculation

Information Needed

Drinking and eating history over past hour
Time of test
Test result
Time of driving

Ask your expert prior to trial.

Retrograde Calculation

How to Get Your Test Within Two Hours - Retrograde Extrapolation

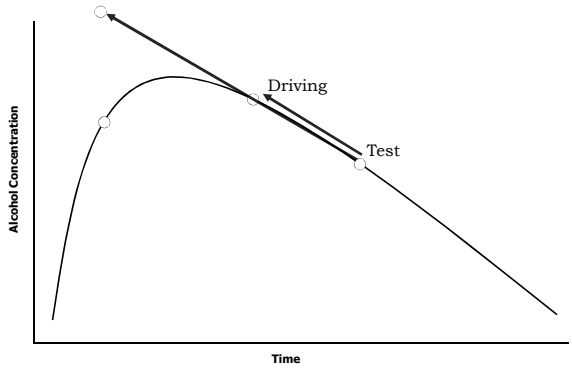
Given certain information, can you calculate the alcohol concentration at a time earlier than the test? (Yes)

What information do you need?

Assuming _____(fill in the facts from your case) would you please calculate the defendant's alcohol concentration at _____ (time of driving or a point within the 2 hr window)?

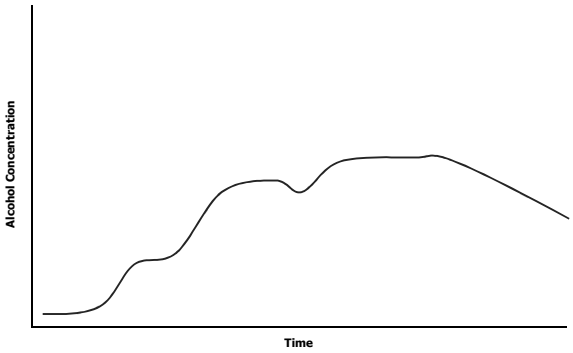
Alcohol Concentration Curve

Bolus Drinking Scenario



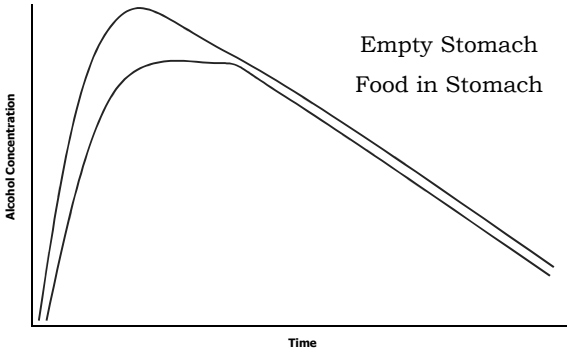
Alcohol Concentration Curve

"Typical" Drinking Scenario



Alcohol Concentration Curve

Food Effect on Absorption



Impairment

vs. Intoxication

Impairment - based upon measurable changes in an individual's performance of a specific task, such as operating a motor vehicle

Intoxication - advanced state of impairment in which gross physical signs of the effects of alcohol are apparent

Impairment

COGNITIVE	SENSORY	MOTOR FUNCTION
Judgment impaired	Near to far vision	Fine muscle control
Sense of caution diminished	Visual acuity	Speech
Drivers often become aggressive risk takers; impulsive	Glare resistance	Balance
Lack self-criticism	Glare recovery	Coordination
Attribute to themselves many qualities which they do not possess	Binocular vision	Walking
Brain's ability to integrate information becomes impaired	Reaction time to optical and acoustical stimuli	Horizontal gaze nystagmus (HGN)
Thoughts clouded	Complex coordination tasks	
Loss of finer grades of attention, observation and comprehension		
Unaware of errors and omissions		
Impairment of short-term memory		

Tolerance

Two Types of Tolerance

Metabolic

Functional

Despite tolerance, all people are still impaired to operate a motor vehicle at 0.08 AC

Tolerance

Metabolic

Tolerance that results in a more rapid elimination of alcohol from the body

Innate – genetics and constitution

Exposure dependent – Microsomal Ethanol Oxidizing System (MEOS)

Tolerance

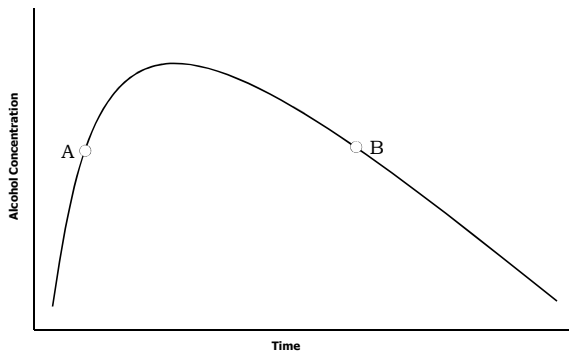
Functional

Tolerance that develops when brain functions adapt to compensate for the disruption in both behavior and bodily functions

Acute – impairment is greater when measured soon after alcohol is consumed than when measured later in the drinking session

Tolerance

Acute



Tolerance

Functional

Chronic – some impairing factors of alcohol are lessened by the central nervous system's response to many drinking sessions

Officer Tools

NHTSA Driving Cues

- Failure to maintain lane position
  - weaving, straddling lane line, turning to wide, drifting in lane
- Speed / Braking problems
  - stops short at intersection, not maintaining constant speed, driving ten or more miles below speed limit
- Vigilance
  - slow to respond to respond to traffic signal, driving without headlights on, wrong way on street, failure to signal
- Judgment
  - tailgating, unsafe lane change, jerky to fast turn, odd behavior in car

Look For Clues That Are Not NHTSA Clues

Officer Tools

Driving Cues

Validation - NHTSA performed three field studies that encompassed more than 12,000 stops

Any one cue = 35% likelihood over 0.08%
Any two cues = 50% likelihood over 0.08%

Weaving = 65% likelihood over 0.08%
Driving on wrong side of road = 70% likelihood over 0.08%

NHTSA Driving Clues

Rule 702/*Daubert* should only apply to the percentages

Officer Tools

Standardized Field Sobriety Tests (SFSTs)

History

NHTSA sponsored three studies to arrive at the current battery of three SFSTs

Psychophysical Tests For DWI Arrest, California (1977)

Development and Field Test Of Psychophysical Tests For DWI Arrest, California (1981)

Field Evaluation Of A Behavioral Battery For DWI, Maryland, D.C., V.A. N.C. (1983)

Officer Tools

Standardized Field Sobriety Tests (SFSTs)

History

Three additional studies standardized the tests, finalized grading, and proved correlation to BAC

Colorado ,1995 (234 acceptable subjects) SCRI
163 arrests out of 175 arrests were correct (93%)

Florida 1997 (256 acceptable Subjects) SCRI
197 arrests out of 206 arrests were correct (95%)

San Diego, 1998 (234 acceptable subjects) Anacapa
210 arrests out of 234 arrests were correct (90%)

Officer Tools

Standardized Field Sobriety Tests (SFSTs)

Horizontal Gaze Nystagmus (HGN)

Involuntary jerking of the eyes

4 of 6 clues = 88% total accuracy (average)
(Your officer is likely better)

4 or more clues indicates BAC .08 or greater

6 Clues (3 in each eye)
Lack of smooth pursuit
Nystagmus at maximum deviation
Onset of nystagmus before 45 degrees

Officer Tools

Standardized Field Sobriety Tests (SFSTs)

Walk and Turn

2 of 8 clues = 79% total accuracy (average for above .08 BAC)
Can't correlate # of cues to BAC in AZ

8 Clues
Loses balance during instructions
Starts before the instructions are finished
Stops while walking
Does not touch heel to toe
Steps out of line
Uses arms to balance
Improper turn
Incorrect number of steps

Officer Tools

Standardized Field Sobriety Tests (SFSTs)

One Leg Stand

2 of 4 clues = 83% total accuracy (average for above .08 BAC)
Can't correlate # of cues to BAC in AZ

4 Clues

The suspect sways while balancing
Subject uses his arms to balance
Subject hops while balancing
Subject puts foot down

SFSTs

Rule 702/*Daubert* does not apply to the walk & turn and one leg stand. *State v. Superior Court* (*Blake,* RPI) 718 P.2d 171 (1986).

- So compliance with the studies should not affect admissibility
- Includes age, weight, physical condition, etc.

Studies reviewed correlation of BAC to Cues on SFSTs. Cannot do that in AZ. *Albrect*

Blood Alcohol Analysis

Phlebotomy Blood Draw Kits

NIK, Lynn Peavey, and Tri-Tec

Outer box
Inner box
Plastic bag, tray
2 vacuntainer tubes (grey top)
- Preservative - sodium fluoride
- Anticoagulant - potassium oxalate
- Vacuum dated for freshness

1 non-alcoholic swab
- Iodine
- Benzalkonium chloride

Butterfly needle
Evidence seals

Blood Alcohol Analysis

Property and Evidence

Agency Request For Scientific Examination

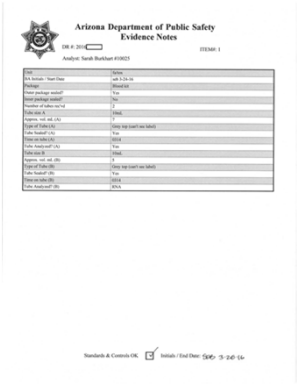
Chain of Custody

Requests disseminated to appropriate unit

Blood refrigerated in walk in cooler

Blood Alcohol Analysis

Evidence Notes



Arizona Department of Public Safety
Evidence Notes

DR #: 2016-[redacted] ITEM#: 1

Analyst: Sarah Burkhart #10025

Unit	fa/tox
BA Initials / Start Date	seb 3-24-16
Package	Blood kit
Outer package sealed?	Yes
Inner package sealed?	No
Number of tubes rec'vd	2
Tube size A	10mL
Approx. vol. mL (A)	7
Type of Tube (A)	Grey top (can't see label)
Tube Sealed? (A)	Yes
Time on tube (A)	0314
Tube Analyzed? (A)	Yes
Tube size B	10mL
Approx. vol. mL (B)	5
Type of Tube (B)	Grey top (can't see label)
Tube Sealed? (B)	Yes
Time on tube (B)	0314
Tube Analyzed? (B)	RNA

Standards & Controls OK: ☑ Initials / End Date: SEB 3-24-16

Blood Alcohol Analysis

Evidence Notes

Unit	fa/tox
BA Initials / Start Date	seb 3-24-16
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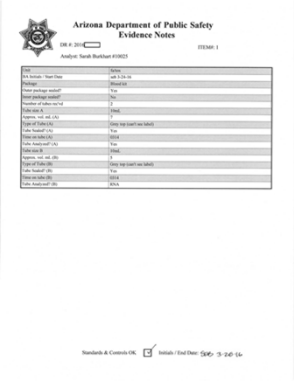
Tube Sealed? (B)	Yes
Time on tube (B)	0314
Tube Analyzed? (B)	RNA

Blood Alcohol Analysis

Evidence Notes



Arizona Department of Public Safety
Evidence Notes

DR #: 2016-[redacted] ITEM#: 1

Analyst: Sarah Burkhart #10025

Job:	Drive
BA Initials / Start Date:	ash 3-24-16
Package:	Blood kit
Inner package sealed?	Yes
Outer package sealed?	No
Number of tubes on vial	2
Tube size A:	10mL
Approx. vol. ml. (A):	5
Typical Tube (A):	Grey top (can't see label)
Tube Sealed? (A):	Yes
Time on tube (A):	1014
Tube Analyzed? (A):	Yes
Tube size B:	10mL
Approx. vol. ml. (B):	5
Typical Tube (B):	Grey top (can't see label)
Tube Sealed? (B):	Yes
Time on tube (B):	1014
Tube Analyzed? (B):	KNA

Standards & Controls OK: ☑ Initials / End Date: SAB 3-24-16

Blood Alcohol Analysis

Evidence Opening

Notes
One sample open at a time
Seals – evidence tape (not air tight)
Number of tubes
Name
Anything else

Blood Alcohol Analysis

Evidence Opening

Ensure homogeneity of sample
Rock the blood baby
Vortex
Tissue Grinder
Ensures homogeneity of sample

Blood Alcohol Analysis

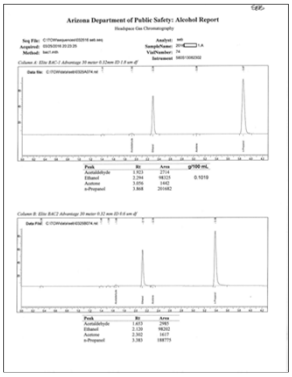
Pipet Samples

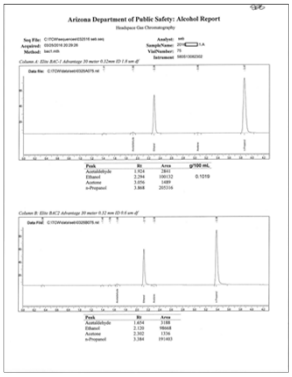
One open at a time
(Conical cup)
100 Microliters
1 mls of internal standard
Crimp

Pipetter/Diluter

Blood Alcohol Analysis

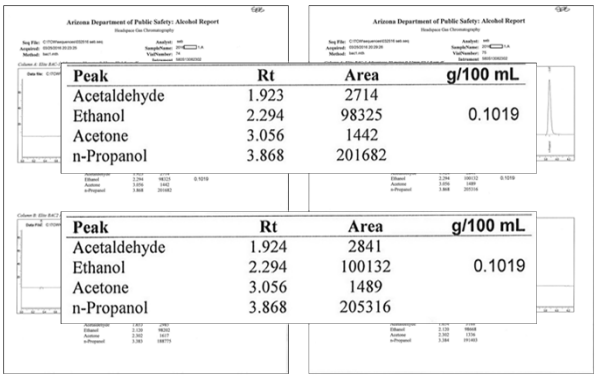
Internal Standard Method





Blood Alcohol Analysis

Internal Standard Method



Peak	Rt	Area	g/100 mL
Acetaldehyde	1.923	2714	
Ethanol	2.294	98325	0.1019
Acetone	3.056	1442	
n-Propanol	3.868	201682	

Peak	Rt	Area	g/100 mL
Acetaldehyde	1.924	2841	
Ethanol	2.294	100132	0.1019
Acetone	3.056	1489	
n-Propanol	3.868	205316	

Blood Alcohol Analysis

Internal Standard Method

Area Counts	Area Counts
Ethanol - 98325	Ethanol - 100132
n-propanol - 201682	n-propanol - 205316
Ratio	**Ratio**
98325/201682 = 0.487	100132/205316 = 0.487

Headspace Gas Chromatograph

(PerkinElmer GC & Autosampler)

Blood Alcohol Analysis

Report

Current reports
- average readings
- include uncertainty budget

ARIZONA DEPARTMENT OF PUBLIC SAFETY

SCIENTIFIC EXAMINATION REPORT

LAB NO. 20[redacted]
Page 1 of 1

AGENCY	Goodyear Police Department Goodyear, AZ 85338
AGENCY NO.	20[redacted]
OFFICER	JOHNSON, #1107
DATE	March 28, 2016
NAME(S)	[redacted]

EXAMINATION REQUESTED
Alcohol Analysis

ITEMS
1.A. Blood specimen

RESULTS / INTERPRETATIONS
1.A. Analysis of the specimen showed it to contain 0.101 ± 0.003 grams of ethanol per 100 mL of blood.

SARAH E BURKHART, #10023, Criminalist
Central Regional Crime Laboratory
2102 W. Encanto Blvd., Phoenix, AZ 85009
(602) 223-2960

For quantitative values, the uncertainty of the concentration is given at a level of confidence greater than 99.73%.

Laboratory System Accredited by the ASCLD/LAB - International (ISO)
Any notes, photographs, charts, or graphs generated during the examination are retained in the laboratory.

Blood Alcohol Analysis

Discovery

<u>"Standard Disclosure"</u>
Scientific Analysis Report
Analyst Notes
Chromatograms for subject's sample
Chain-of-custody
Run summary of Quality Assurance

<u>"Control Packet"</u>
Everything included in Standard Disclosure
Chromatograms for Quality Assurance

Blood Alcohol Analysis

How to Admit Blood Alcohol Results

<u>Sample Collection</u>

Establish:
- when, where & by whom sample was collected
- refrigeration
- swab, tube contents, etc.

Defense may stipulate

Blood Alcohol Analysis

How to Admit Blood Alcohol Results

Chain of Custody

Prove sample tested at the lab is the defendant's sample

- What was sample collected in?
- How was it labeled?
- Protocols
- Photo

Defense may stipulate to part or all of chain

Blood Alcohol Analysis

How to Admit Blood Alcohol Results

Chain of Custody

Challenges to the chain of custody go to the weight, not the admissibility of evidence

The defendant must make some showing that the evidence has been tampered with

State v. Morales, 170 Ariz. 360 (App. 1991)

Rule 702
5 Portions of the Rule

- "A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:"
  - #1 must qualify witness as an expert
  - Thoroughly qualify your witness

5 Portions of Rule 702 #2

- "a) The expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue"
  - Blood testing embraces scientific, technical & other specialized knowledge
  - So just relevance

5 Portions of Rule 702 #3

- b) The testimony is based on sufficient facts or data
  - Factual basis for opinion
    - Have expert explain basis for opinion
  - Can the opinion, reasoning or method be properly applied to the facts in issue?
  - What did they do? How did they do it?

5 Portions of Rule 702 #4

- c) The testimony is the product of reliable principles and methods
  - This is similar to *Frye* (accepted in relevant scientific community) – Lay the *Deason* foundation +
  - Quality assurance
  - Method - Gas Chromatography is reliable & has been tested
    - Studies
    - By manufacturer
    - Lab validation

5 Portions of Rule 702 #5

- d) the expert has reliably applied the principles and methods to the facts of the case.
  - Case specific
  - Did this witness do it correctly
    - Focus is on principles & methodology
  - The accepted technique was properly applied and the results accurately recorded

Daubert !

(Rule 702)

- Qualify witness as an expert
- Chain of custody (prove it was defendant's blood)
- What method was used
- Establish scientific reliability
- What did he/she do?
- Emphasize quality assurance/reliability

Blood Alcohol Analysis

How to Admit Blood Alcohol Results

Deason/Daubert

Establish general acceptance of underlying science (i.e. Infrared Spectrophotometry, Gas Chromatography or Mass Spectrometry).

Is the method used accepted in the relevant scientific community as a valid method for breath/blood/urine testing?

Blood Alcohol Analysis

How to Admit Blood Alcohol Results

Deason/Daubert

Based on a review of the procedure used in analyzing the sample, the test results, and records:

- The accepted technique was properly used
- The readings are an accurate measurement and recording of the defendant's alcohol concentration (or the presence of drugs)
- The test results would be accepted in the relevant scientific community as valid test results (legally not required but judge may)

Blood Alcohol Analysis

Headspace Gas Chromatography

Measures alcohol content in the air above the blood

Standard in the scientific community for blood alcohol analysis

Blood Alcohol Analysis

Henry's Law

In a closed system, the concentration of a volatile substance above a fluid is proportional to the concentration of that substance in the fluid at equilibrium

Blood Alcohol Analysis

PerkinElmer Clarus 500 w/ Turbomatrix HS110

Blood Alcohol Analysis

Chromatography

Blood Alcohol Analysis

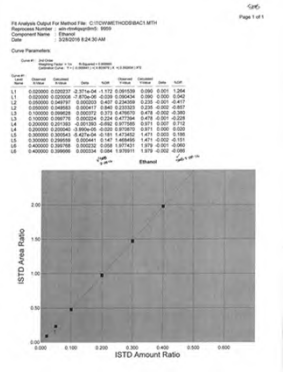
Chromatography

Blood Alcohol Analysis

Quality Assurance

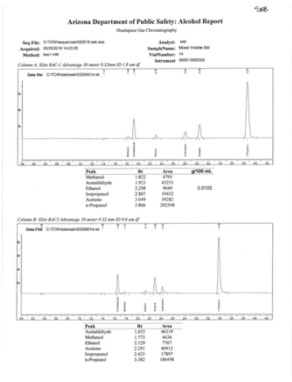
Calibration Curve

NIST Traceable Calibration: 0.02, 0.05, 0.10, 0.20, 0.30, 0.40



Mix Standard

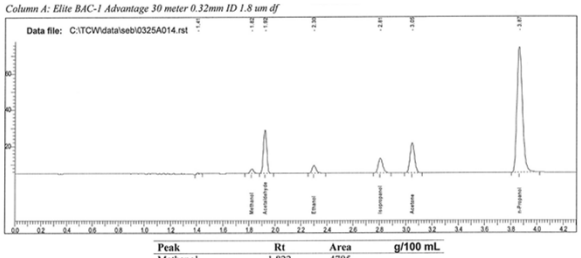
Separation of Common Volatiles



Mix Standard

Separation of Common Volatiles

Column A: Elite BAC-1 Advantage 30 meter 0.32mm ID 1.8 um df

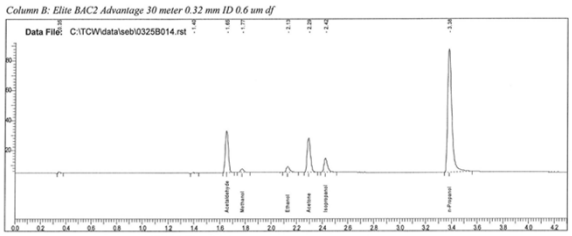


Peak	Rt	Area	g/100 mL
Methanol	1.822	4795	
Acetaldehyde	1.923	43251	
Ethanol	2.298	9049	0.0105
Isopropanol	2.807	19452	
Acetone	3.049	39282	
n-Propanol	3.866	202548	

Mix Standard

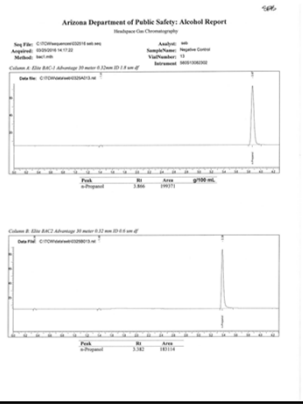
Separation of Common Volatiles

Column B: Elite BAC2 Advantage 30 meter 0.32 mm ID 0.6 um df



Peak	Rt	Area
Acetaldehyde	1.653	46319
Methanol	1.773	4436
Ethanol	2.129	7767
Acetone	2.291	40912
Isopropanol	2.423	17897
n-Propanol	3.382	186498

Negative


Arizona Department of Public Safety: Alcohol Report

Headspace Gas Chromatography

Seq File: C:\TCW\measurement\020318.seb.seq
Acquired: 03/20/2018 14:17:22
Method: Seb7.mth

Analyst: seb
Sample/Name: Negative Control
Vial/Number: 13
Instrument: MSD13382302

Column A: Elite BAC-1 Advantage 30 meter 0.32mm ID 1.8 um df

Data file: C:\TCW\data\seb\0320A013.rst

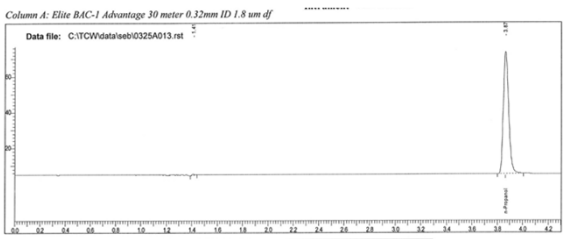
Peak	Rt	Area	g/100 mL
n-Propanol	3.866	199275	

Column B: Elite BAC2 Advantage 30 meter 0.32 mm ID 0.6 um df

Data File: C:\TCW\data\seb\0320B013.rst

Peak	Rt	Area
n-Propanol	3.382	183114

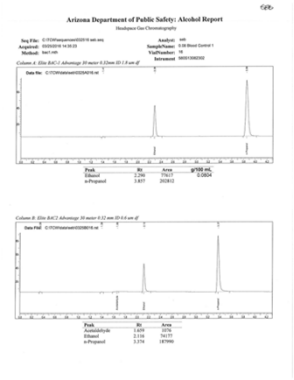
Negative



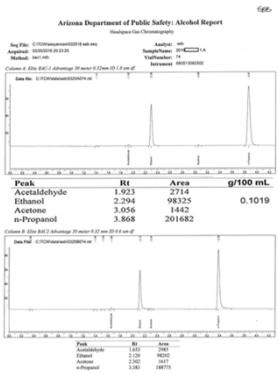
Peak	Rt	Area	g/100 mL
n-Propanol	3.866	199371	

Controls

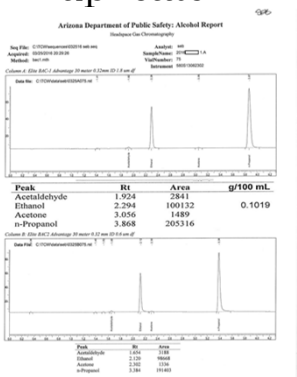
Aqueous and Whole Blood



Cases Run in Duplicate



Peak	Rt	Area	g/100 mL
Acetaldehyde	1.923	2714	
Ethanol	2.294	98325	0.1019
Acetone	3.056	1442	
n-Propanol	3.868	201682	



Peak	Rt	Area	g/100 mL
Acetaldehyde	1.924	2841	
Ethanol	2.294	100132	0.1019
Acetone	3.056	1489	
n-Propanol	3.868	205316	

Verification Standards

Same as Calibration Standards

Analyzed at the end of run

Verifies pipettor and calibration stability

Will only see in older cases

Blood Alcohol Analysis

Batch Sequence

Sequence Sample Descriptions - Channel A

Row	Type	Name	Number
1	Cal:Replace	0.00%	001
2	Cal:Replace	0.02%	002
3	Cal:Replace	0.05%	003
4	Cal:Average	0.05%	004
5	Cal:Replace	0.10%	005
6	Cal:Average	0.10%	006
7	Cal:Replace	0.20%	007
8	Cal:Average	0.20%	008
9	Cal:Replace	0.30%	009
10	Cal:Average	0.30%	010
11	Cal:Replace	0.40%	011
12	Cal:Average	0.40%	012
13	Blank	Negative Control	013
14	Sample	Mixed Volatile Std	014
15	Ctrl:Sample	0.40 Aq Control	015
16	Ctrl:Sample	0.08 Blood Control 1	016
17	Sample	2016013283 1	017
18	Sample	2016013283 1	018
19	Sample	2016013110 1.A	019
20	Sample	2016013110 1.A	020
21	Sample	2016013314 A1.A	021
22	Sample	2016013314 A1.A	022
23	Sample	2016014099 A/B.A	023
24	Sample	2016014099 A/B.A	024
25	Sample	2016014234 1.A	025
26	Sample	2016014234 1.A	026
27	Ctrl:Sample	0.20 Aq Control	027
28	Sample	2016014247 1.A	028
29	Sample	2016014247 1.A	029
30	Sample	2016014391 1.A	030
31	Sample	2016014391 1.A	031
32	Sample	2016014534 1.A	032
33	Sample	2016014534 1.A	033
34	Sample	2016014669 1.A	034
35	Sample	2016014669 1.A	035
36	Sample	2016014862 1.A	036
37	Sample	2016014862 1.A	037
38	Ctrl:Sample	0.20 Blood Control 1	038
39	Sample	2016014904 1.A	039
40	Sample	2016014904 1.A	040
41	Sample	2016014994 A.A	041
42	Sample	2016014994 A.A	042
43	Sample	2016015069 1.A	043
44	Sample	2016015069 1.A	044
45	Sample	2016704528 1.A	045
46	Sample	2016704528 1.A	046
47	Sample	2016704529 1.A	047
48	Sample	2016704529 1.A	048
49	Ctrl:Sample	0.20 Aq Control	049
50	Sample	2016704530 1.A	050
51	Sample	2016704530 1.A	051
52	Sample	2016704531 1.A	052
53	Sample	2016704531 1.A	053
54	Sample	2016704532 1.A	054
55	Sample	2016704532 1.A	055
56	Sample	2016704533 1.A	056
57	Sample	2016704533 1.A	057

Sequence Sample Descriptions - Channel A

Row	Type	Name	Number
58	Sample	2016704534 1.A	058
59	Sample	2016704534 1.A	059
60	Ctrl:Sample	0.08 Blood Control 2	060
61	Sample	2016704535 1.A	061
62	Sample	2016704535 1.A	062
63	Sample	2016704536 1.A	063
64	Sample	2016704536 1.A	064
65	Sample	2016704537 1.A	065
66	Sample	2016704537 1.A	066
67	Sample	2016704538 1.A	067
68	Sample	2016704538 1.A	068
69	Sample	2016704763 57-5.A	069
70	Sample	2016704763 57-5.A	070
71	Ctrl:Sample	0.08 Aq Control	071
72	Sample	2016704801 1.A	072
73	Sample	2016704801 1.A	073
74	Sample	2016704802 1.A	074
75	Sample	2016704802 1.A	075
76	Sample	2016704894 4.A	076
77	Sample	2016704894 4.A	077
78	Sample	2016704923 39375.A	078
79	Sample	2016704923 39375.A	079
80	Sample	2016704924 39379.A	080
81	Sample	2016704924 39379.A	081
82	Ctrl:Sample	0.20 Blood Control 2	082
83	Sample	2016704925 39399.A	083
84	Sample	2016704925 39399.A	084
85	Sample	2016704926 39413.A	085
86	Sample	2016704926 39413.A	086
87	Sample	2016704927 39419.A	087
88	Sample	2016704927 39419.A	088
89	Sample	2016704928 39424.A	089
90	Sample	2016704928 39424.A	090
91	Sample	2016704929 39462.A	091
92	Sample	2016704929 39462.A	092
93	Ctrl:Sample	0.04 Aq Control	093
94	Sample	2016704930 39396.A	094
95	Sample	2016704930 39396.A	095
96	Sample	PT16-1017 1	096
97	Sample	PT16-1017 1	097
98	Sample	PT16-1017 2	098
99	Sample	PT16-1017 2	099
100	Sample	PT16-1017 3	100
101	Sample	PT16-1017 3	101
102	Sample	PT16-1017 4	102
103	Sample	PT16-1017 4	103
104	Ctrl:Sample	0.08 Blood Control 3	104
105	Ctrl:Sample	0.20 Blood Control 3	105

Quality Assurance

Review

Technical Review

Administrative Review

Responding to Defense Foundational Objections

If in Doubt
Weight not admissibility

All the State is required to do is lay the basic foundation. Any remaining issues go to the weight, not the admissibility, of the evidence.

State v. Plew, 155 Ariz. 44 (1987); *State v. Superior Court* (*Weant,* RPI), 172 Ariz. 153 (App. 1992).

Battle of the Experts

Disagreements between expert witnesses go to weight, not the admissibility. *State v. Velasco,* (*Alday,* RPI), 165 Ariz. 480, 486, (1990).

Where there is a lack of unanimity in scientific community on accuracy of a breath test, "the scientific disagreement affects only the weight and not the admissibility of evidence." *State v. Olivas*, 77 Ariz. 118 (1954).

Your Criminalist and You

Can do drink calculations

"One beer" How big would that be?

Retrogrades

Effect of alcohol on humans

Explain "issues" with the Intox/GC

Rebut defense expert's testimony

Questions?

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10-15-06