NACDL & NCDD'S 22ND ANNUAL SEMINAR
DWI MEANS DEFEND WITH INGENUITY:
GRAND SLAM DEFENSES

CROSS EXAMINATION OF THE BREATH TEST OFFICER: DECISIONS BASED ON KNOWLEDGE NOT NUMBERS

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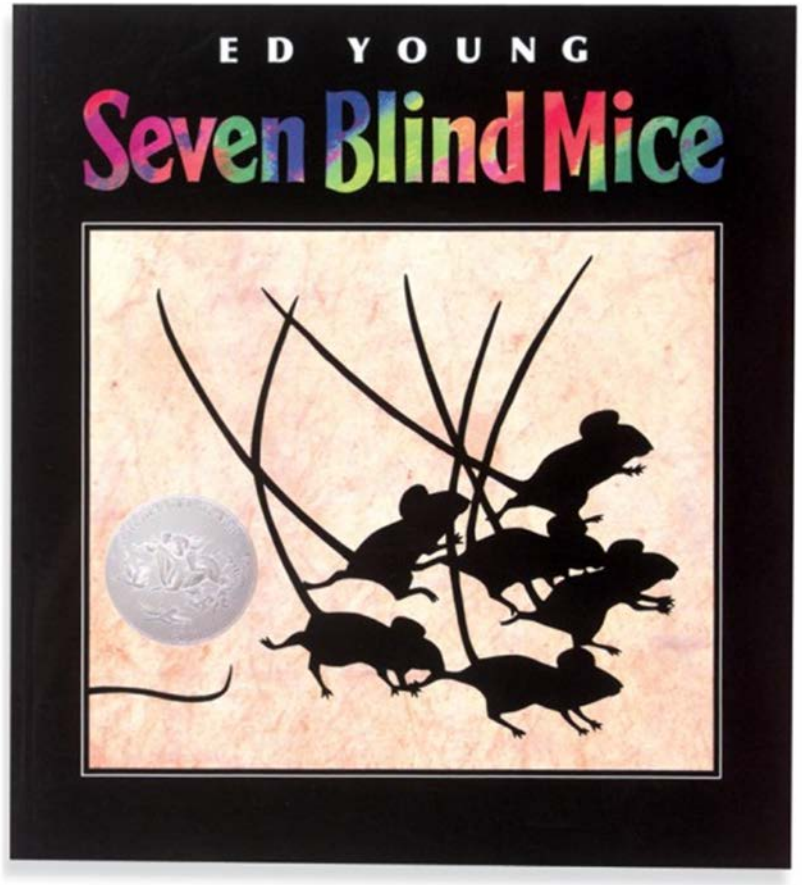
What is a Trial?

Conflict Resolution

Conflict Resolution

- Theory of case
- Context –not .16
- Story telling



Context Requires Knowledge

- Not credible to simply attack machine
- Must know the science
- The jury will not…so you need to get their trust

Context Requires Knowledge

- You need a hook
- Challenge the manner the device was used and/or maintained
- Every breath test case has a hook, if you have not found it keep looking

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CARTRIDGE INSTRUCTIONS

FOOTBALL

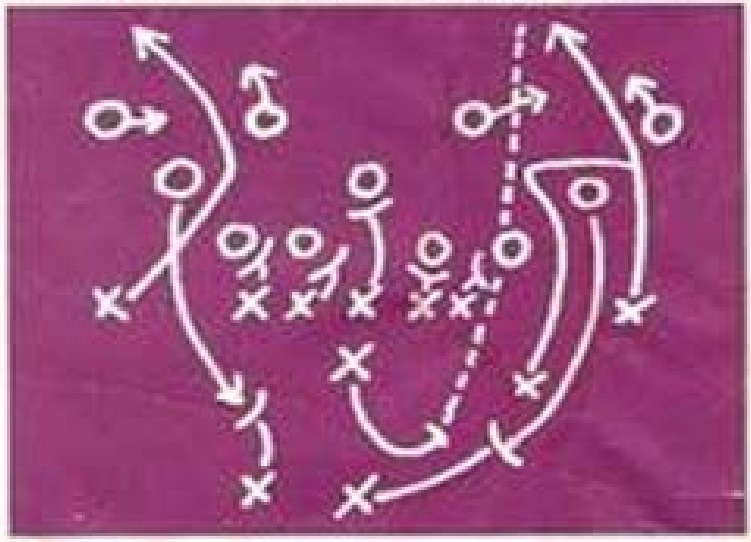
(FOR TWO PLAYERS)

PLAYBOOK

OFFENSE – Run, Kick and Pass plays. Passing Zones.

DEFENSE – Run and Punt defensive alignments.

To learn to use these plays, read instruction book first. (See "How to Use the Playbook" section.)



 PRINTED IN HONG KONG.

THE PLAYBOOK

1. • Manufacturer's Manual
2. • Literature (NCDD)
3. • Local/State Regulations

Fundamental Principles of Breath Testing

HENRY'S LAW

- Henry's law, formulated by William Henry in 1803, is bedrock principal of breath testing
- Simply stated …the concentration of a volatile substance in the air above a fluid is proportional to the concentration of the volatile substance in the fluid
- Ex. Soda


COLA
NATURALLY FLAVOURED
2 L

HENRY'S LAW REQUIREMENTS:

- **Closed system**
- **Known and constant pressure**
- **Known and constant temperature**
- **Reaches equilibrium**

Guth 34C Simulator

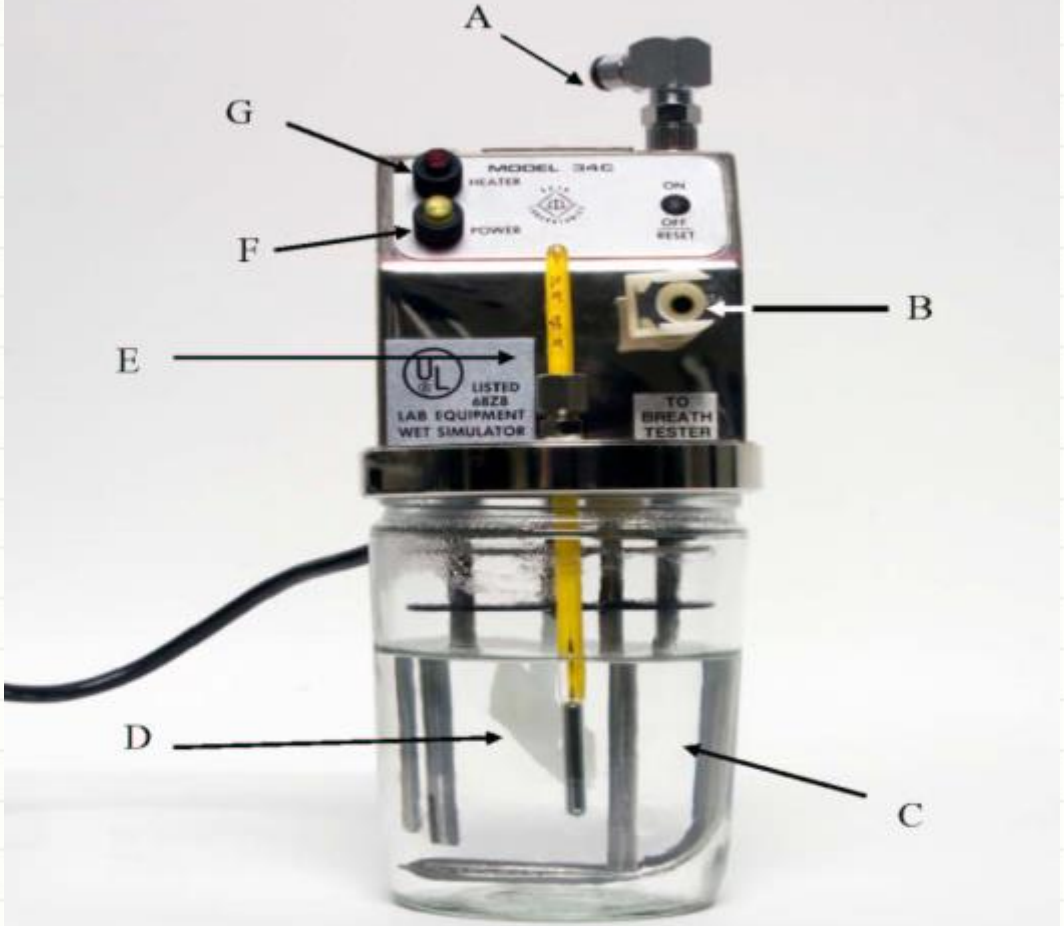


Figure 4

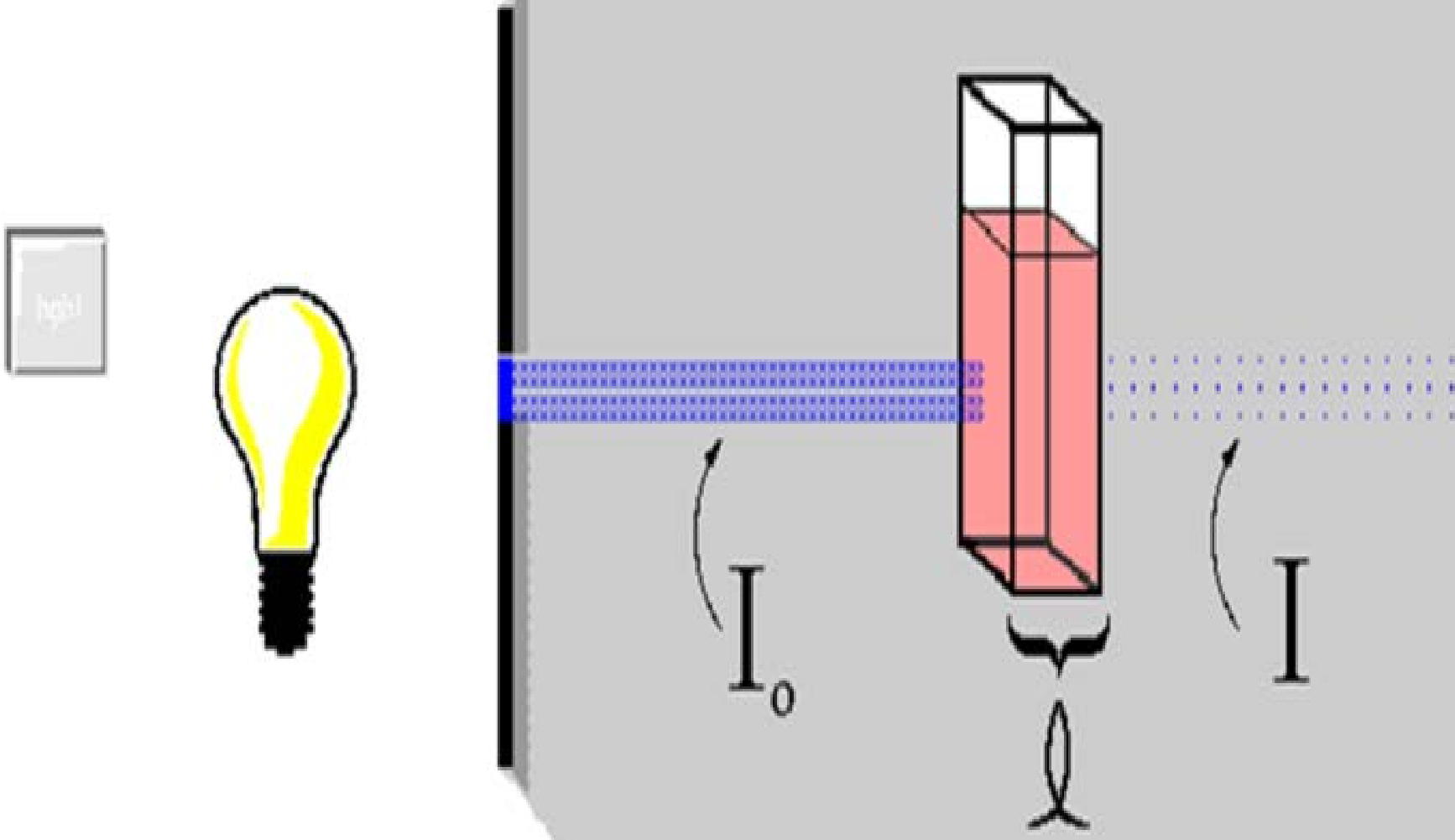
A:	Return Port
B:	Outlet Port
C:	Simulator Solution
D:	Agitator (Stirring Paddle)
E:	Thermometer
F:	Power Indicator
G:	Heater Indicator

The Beer-Lambert Law (or Beer's law)

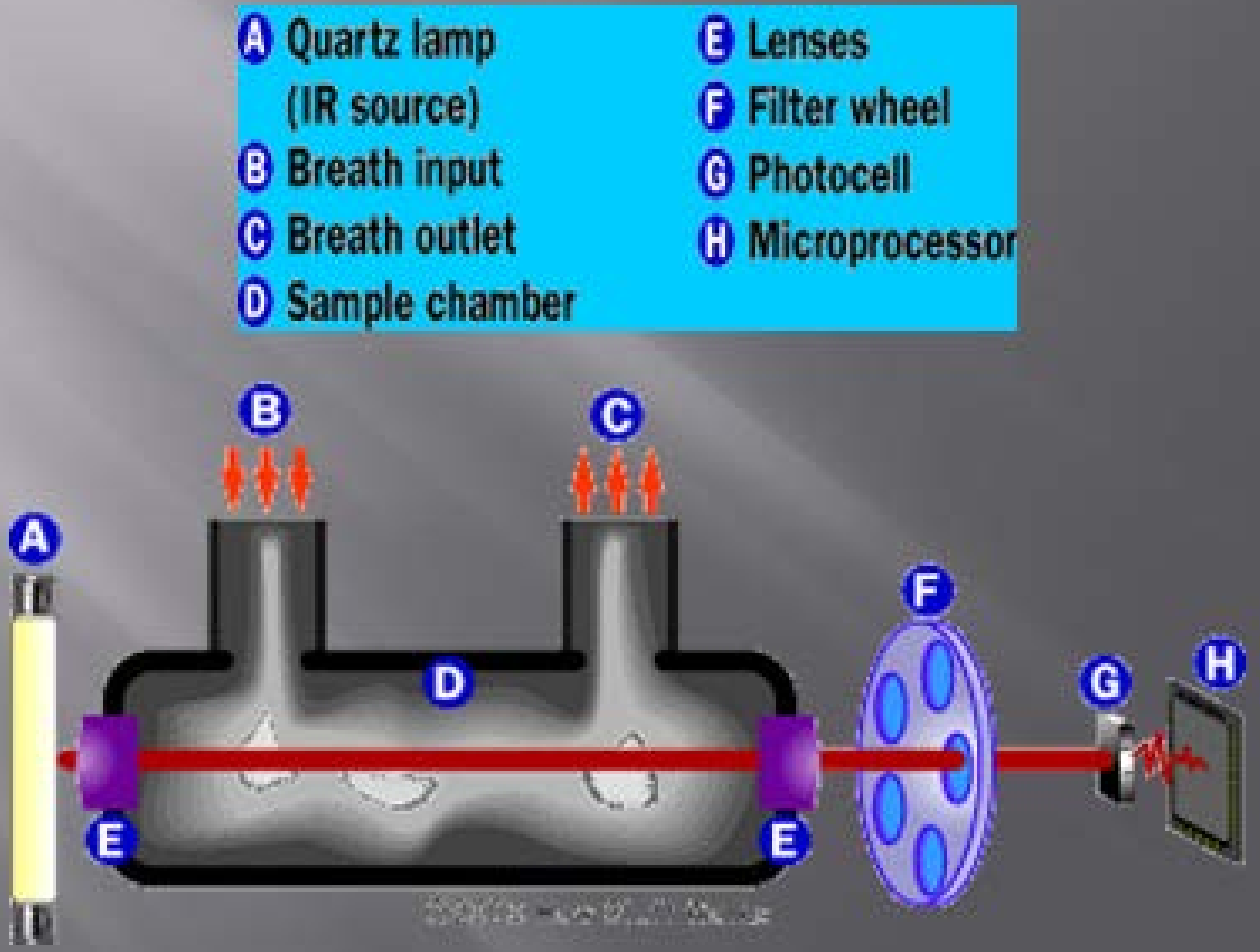
- Beer's Law provides that there is a linear relationship between absorbance and the concentration of an absorbing species.
- Molecules absorb energy, but only energy of a certain wave length will be absorbed by a molecule of any given compound.

The Beer-Lambert Law (or Beer's law)

The Beer-Lambert Law: $A = \varepsilon c \ell$



Fundamentals of Infrared Spectrophotometry



The Breath Test Officer's Bias, Training and Experience

Consider the order you mount that attack.

There are many helpful facts you can elicit:

-assumed partition ratio;
-importance of temperature;
-concern for mouth alcohol; and
-importance of following procedures.

Question Their Knowledge of the Science

Even the more qualified breath test officers will be concerned about attorneys who question them on the science.

Often the officer's response will be that they are not scientists, just breath test operators.

Bingo!

Word Choice – “I Have an Idea”

Not “*technician*” … *operator*
Not “*an Intoxilyzer*”… *machine*
Not a “BAC”… *a reading*

It is also important to reveal to the fact finder just how biased this witness is.

Knowledge, Training and Bias

a) You are a breath test operator?
b) Part of your job is to gather evidence against people charged with DUI?
c) When a person is brought to you for a breath test an arrest has already been made?
d) Another officer has made that arrest?
e) Based on an opinion that the person was intoxicated?

Knowledge, Training and Bias

f) If the testing you conducted led to a conclusion that the person was not intoxicated, your fellow officer would be wrong?

g) Another major part of your job is to testify against people charged with DUI?

h) You have testified for the prosecution before?

i) How many times?

j) How many times have you testified for a defendant on breath testing?

Knowledge, Training and Bias

k) What is your educational background?
l) You have no advanced degrees in forensics?
m) No advanced degrees in Toxicology?
n) Are you a member of the American Academy of Forensic Sciences?
o) Society of Forensic Toxicologists?
p) Published any peer reviewed articles?

"YOU SHOULD NEVER, NEVER DOUBT WHAT NO ONE IS CERTAIN ABOUT"

- Uncertainty of Measurement
- Not Error Margin
- BAC Never Exact
- Why Does This Matter?

2100:1 Ratio

Breath tests presume a static relationship between the alcohol molecules in one's blood stream and the amount of alcohol molecules in the same person's breath.

The machine is programmed to presume that 2100mL of breath contains the same amount of alcohol as 1 mL of blood. This is known as the 2100:1 ratio.

2100:1 Ratio

“Seems a reasonable guess”

This 2100:1 ratio is not the true partition ratio for every person and varies from person to person. Blood to breath partition ratios can also vary within specific individuals across a one-hour period.

2100:1 Ratio

In a study conducted upon 21 males aged 30-55, alcohol research scientist A.W. Jones observed blood/breath partition ratios ranging between 1,837 to 2,666. This provides an area of cross examination in every breath test case that results in a reported concentration of blood alcohol.

2100:1 Ratio

Studies have shown that this can be from as low as 1123:1 – 3100:1

Resulting in over estimating blood alcohol concentrations by 20-25% in 20% of the population.

Semenoff, Jan, Blood to breath ratios in alcohol testing, Counter-Point Journal, Vol. 1, Issue. 2 (2016); see also T.A.A & Payne, J.P., Significance of Variation in Blood-Breath Partition Coefficient of Alcohol, British Medical Journal, 1976

Partition Ratio

- Here's how to calculate your client's BAC if he has a lower partition ratio.

- (Client's BAC) / 2100 X (lower partition ratio) = BAC

Partition Ratio

.100 / 2100 = .000047619

.000047619 x 1500 = .07

a) The machine reported a blood alcohol result?
b) But the machine takes a sample of breath?
c) Not blood? Conversion needed.
d) You are familiar with the term partition ratio?
e) Partition ratio describes the relationship between the amount of alcohol molecules in one's blood in relation to one's breath, correct?

f) The machine presumes Mr. Walker had a ratio of 2100 to 1.

g) In other words, the machine is programmed to recognize that for every single part of alcohol in one's blood, there are 2100 parts of alcohol in one's breath, correct?

h) People don't necessarily have partition ratios in their bodies at 2100 to 1?

i) That is just a guess?

j) An individual's blood to breath ratio can vary over time?

k) This machine does not account in its calculations for variable partition ratios from person to person, does it?

l) It is fixed at 2,100 to one?

m) It is one-size fits all?

n) If the defendant had a true partition ratio of less than 2100 to one, this machine would artificially inflate his true blood alcohol level, will it not?

o) There is no way for you to know what Mr. Walker's true partition ratio was on the night he was arrested, is there?

BODY TEMPERATURE

- They all agree temperature is important, e.g. Simulator
- Client's temperature not taken
- The machine assumes that your expired breath temperature is 34° Celsius. Is it correct?

34° C IS WRONG

- In 1998 the International Association for Chemical Testing (IACT) published a literature review where they agreed that the average expired breath temperature was 35° C.

- Carpenter, D.A. and Buttram, J.A., Breath Temperature: An Alabama Perspective, IACT Newsletter, Vol. 9, No. 2, July, 1998.

Fox, G.R. and Hayward J.S., Effect of Hyperthermia on Breath-alcohol Analysis, Journal of Forensic Science, 34(4): 836-41, July, 1989.

- In 1989 Fox and Hayward performed a study to measure how much breath readings are affected by having an elevated core body temperature.
- The BRAC increased over the BAC “8.6% for each degree Celsius increase in deep-core body temperature.”
- Still think .08 = .08?

a) Does the machine have a margin of error?

b) Do you refer to it as tolerance?

c) Prior to testing the defendant's breath, you ran a check on the machine using a simulator?

d) This is required?

e) This is part of your check list?

f) You use a simulator solution?

g) It has a known amount of alcohol? 10?

h) Solution is a specific temperature?

i) That temperature is 34 degrees Celsius?

j) Why? (This is one of those circumstances where an open-ended question works.)

k) Did not measure Mr. Walker's temperature.

YOU MAY WISH TO NOW CONFRONT THE WITNESS WITH THE VARIOUS STUDIES THAT SHOW THE IMPACT TEMPERATURE CAN HAVE ON BREATH TESTS – CONSIDERATION SHOULD BE GIVEN TO SENDING THE OFFICER THESE STUDIES IN ADVANCE OF TRIAL, SO HE CANNOT SIMPLY SAY HE WAS NOT AWARE OF THEM.

l) The alcohol vapors are blown into the machine?

m) The machine generates a result?

n) You expect the reading to be .10?

o) Known amount of alcohol

p) There is an "*acceptable range*" of results?

q) .09-.11 is that range?

There are many other lines of cross examination that can be conducted in most breath test cases.

Consideration should be given to how many areas you want to attack and what is gained or lost in pursuing multiple lines of cross examination.

a) Was the machine calibrated for linearity? An expert can be helpful to drive this point home.

b) The breath test officer did not preserve the sample. Preservation of sample is an important part of a forensically reliable test.

c) Police officers will often record what happens in the field but choose not to record the observation period and/or the breath test.

d) Breath testing is an indirect measurement.

e) Breath testing is quick and inexpensive, and the government chose not to do a blood test.

f) The manufacturer's warranty is often expired by the time breath test is done.

g) There is more current technology.

h) Mouth alcohol is a concern in breath testing.

i) How you blow makes a difference or "the longer you blow the higher it will go."

j) Breath testing does not measure blood alcohol concentration at the time of driving.

k) Slope detectors are rarely if ever calibrated or tested using a “dosed” subject.

l) Slope detectors will not recognize end breath contamination.

THE HOOK PRESENT IN SOME CASES

a) States that take one sample of breath.

b) The disconnect defense.

c) The low blood alcohol concentration case.

d) Radio frequency interference (“RFI

e) Repair records.

DISCOVERY AND MAINTENANCE ISSUES

THE HOOK PRESENT IN SOME CASES

f) Mouth alcohol/observation period.

g) Breath testing machines are not specific for alcohol. Look for evidence that there may be a concern for interferents.

h) Inexperience by the officer conducting breath tests if newly trained and certified.

THE HOOK PRESENT IN SOME CASES

i) Medical issues - GERD, diabetes, breathing disorders, etc.

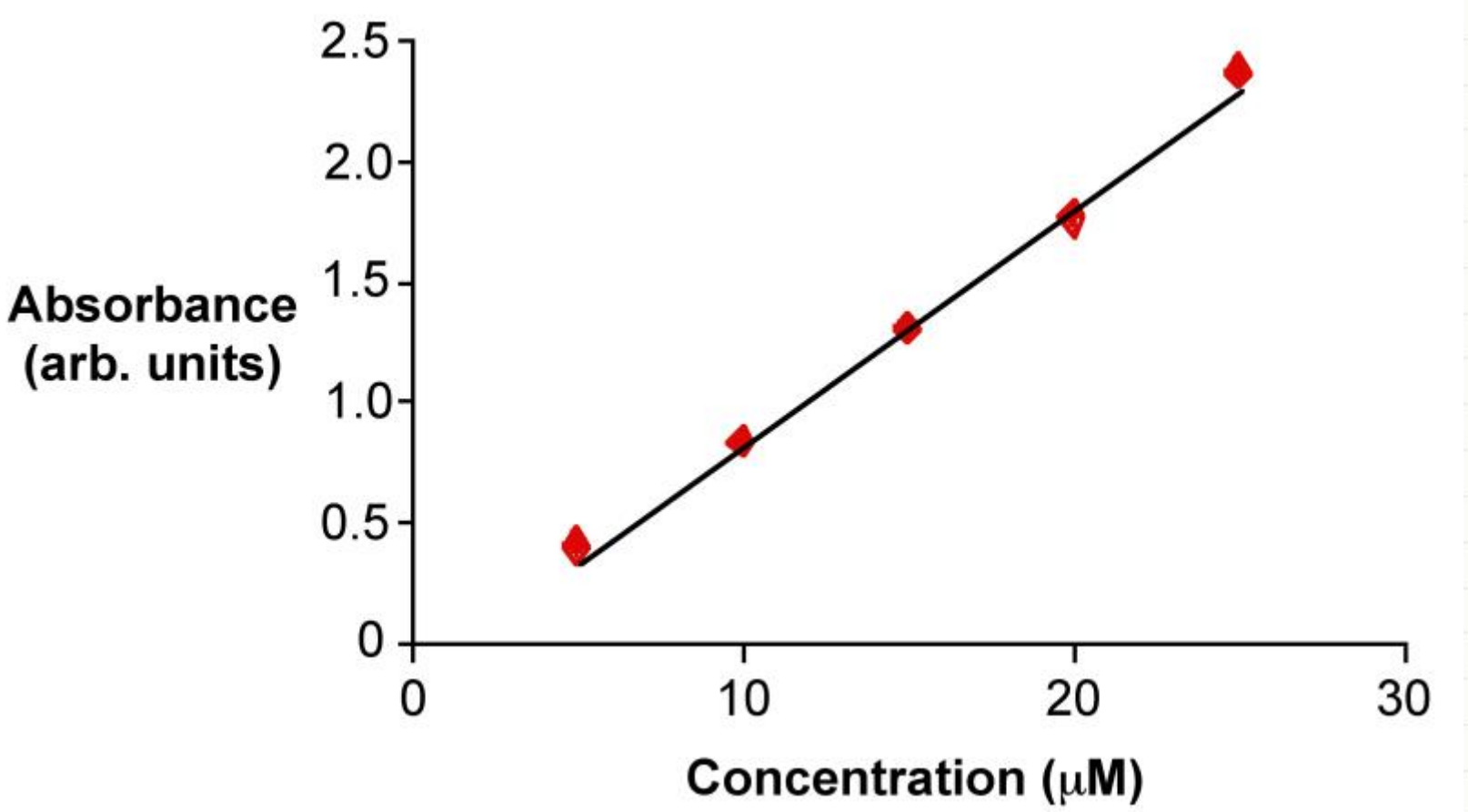
j) Traceability of reference standards

k) Calibration or certification?

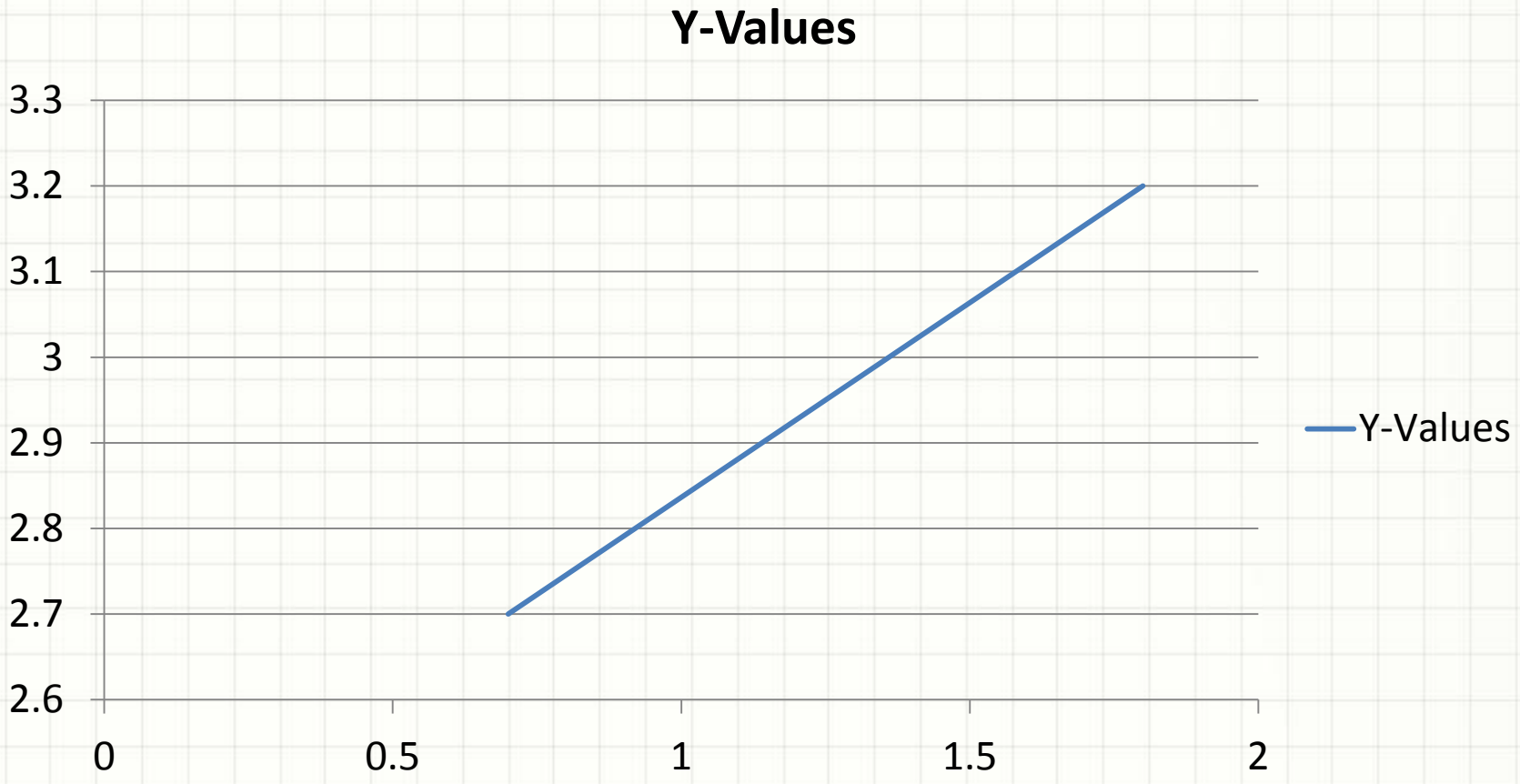
CALIBRATION IS THE PROCESS OF PRESENTING A KNOWN SAMPLE TO A MACHINE, AND INSTRUCTING THE MACHINE TO RESET ITSELF SO THAT IF THE IDENTICAL STIMULUS IS OBSERVED IN THE FUTURE, THE MACHINE WILL REPORT THE MEASUREMENT THAT IS COMMUNICATED AS PART OF THE CALIBRATION. A CALIBRATION CHANGES THE WAY THE MACHINE OPERATES FOR ALL FUTURE USES, WHEREAS A CERTIFICATION DOES NOT

CERTIFICATION IS OFTEN INCORPORATED WITHIN THE PROTOCOL FOR A SUBJECT BREATH TEST, AND WHEN INCORPORATED, THE SUBJECT TEST IS SAID TO BE INVALID WHEN THE CERTIFICATION FAILS TO MEASURE WITHIN THE PERMITTED ERROR RANGE.

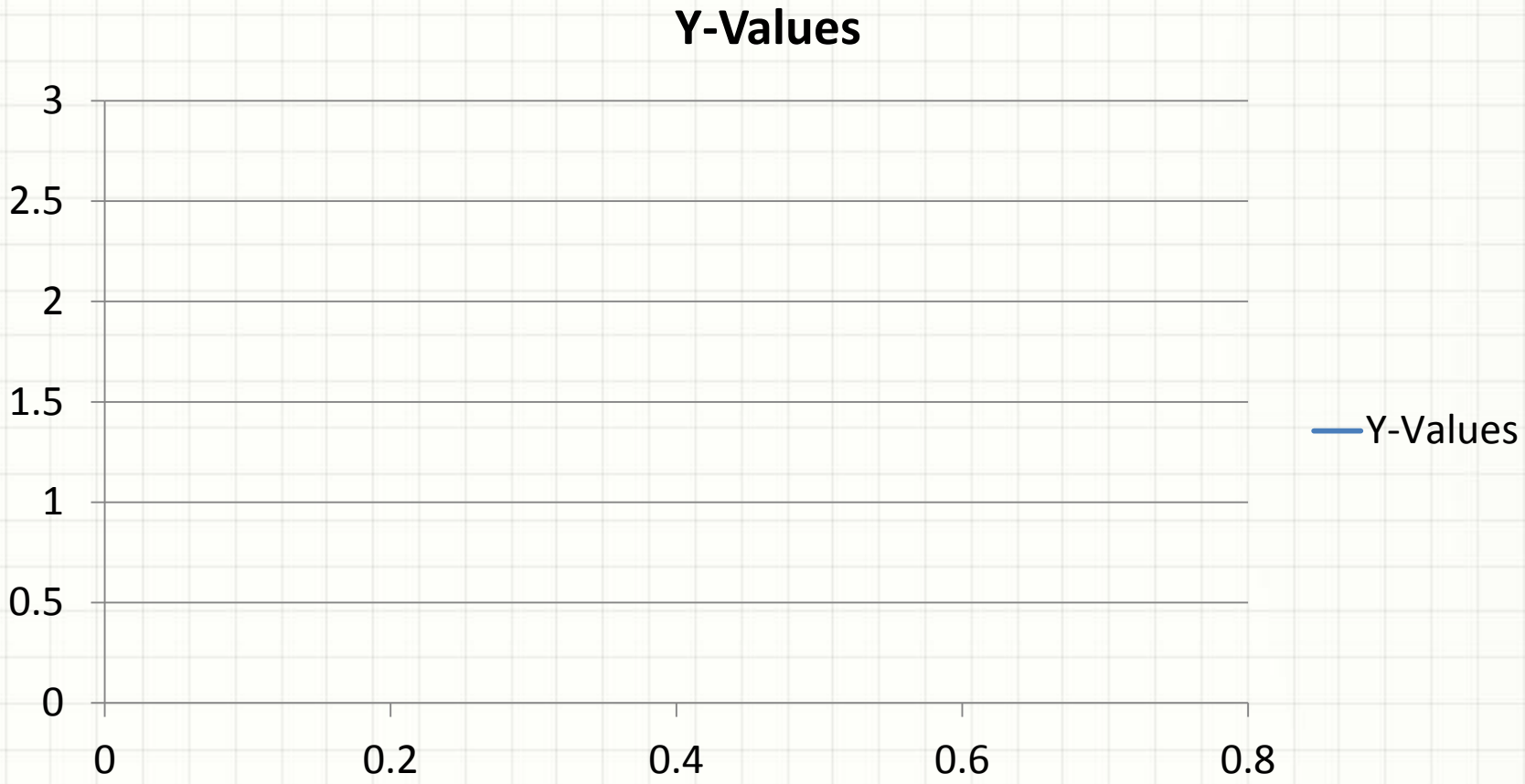
5 Point Curve



2 Points



Single Point



BAD TESTING PROCEDURES

13

X 7

21

7

28

A good decision
is based on knowledge
and not on numbers.

-Plato