

# SCRAM in the News



- A Different Kind of Bling: Bracelet Tracks Alcohol Consumption Monitoring Device Like Lohan's Samples Sweat, Records Ethanol Levels; ABC News 7/18/07



SCRAM:  
Secure Continuous Remote  
Alcohol Monitor  
*Continuous Alcohol  
Monitoring Technology for  
West Texas Chiefs*

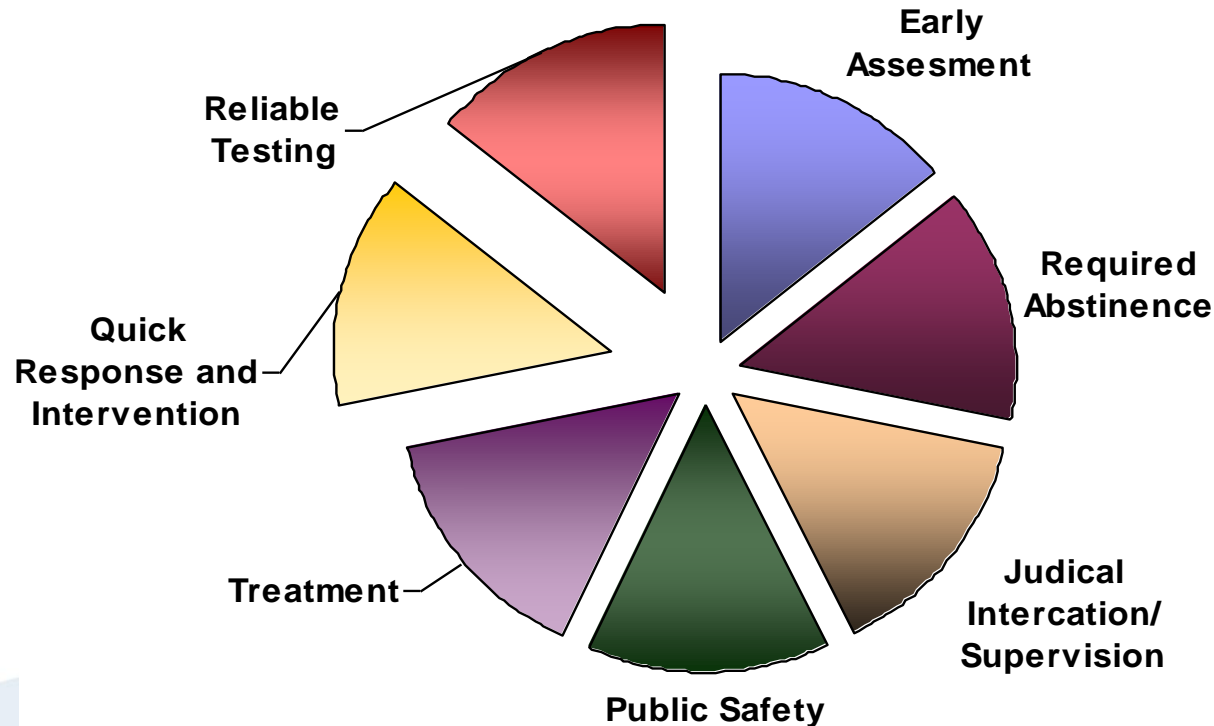
*Presented By:*

*Larry Vanderwoude, LCDC  
Recovery Healthcare Corporation*



# Management of the Alcohol Offender

## The Model: Components of a Managing an Alcohol Offender



**What's been missing for alcohol offenders?**  
Reliable/frequent testing with Quick Response and Intervention

# Secure Continuous Remote Alcohol Monitor

- Worn on the ankle 24/7
- Goes where the offender goes
- Provides continuous around-the-clock monitoring
- Tests for alcohol every 30 minutes
- Uses transdermal technology to measure alcohol as it evaporates through the skin
- Automatically collects, stores, and transfers all data to the SCRAM modem on a predetermined schedule



# Transdermal Alcohol

- People eliminate a small amount of waste products transdermally (through the skin) as perspiration
  - Sensible perspiration: sweat in the liquid phase
  - Insensible perspiration: sweat in the vapor phase (constantly present and unnoticeable)
- Approximately 1% of consumed alcohol is eliminated this way

# Transdermal Transport is Widely

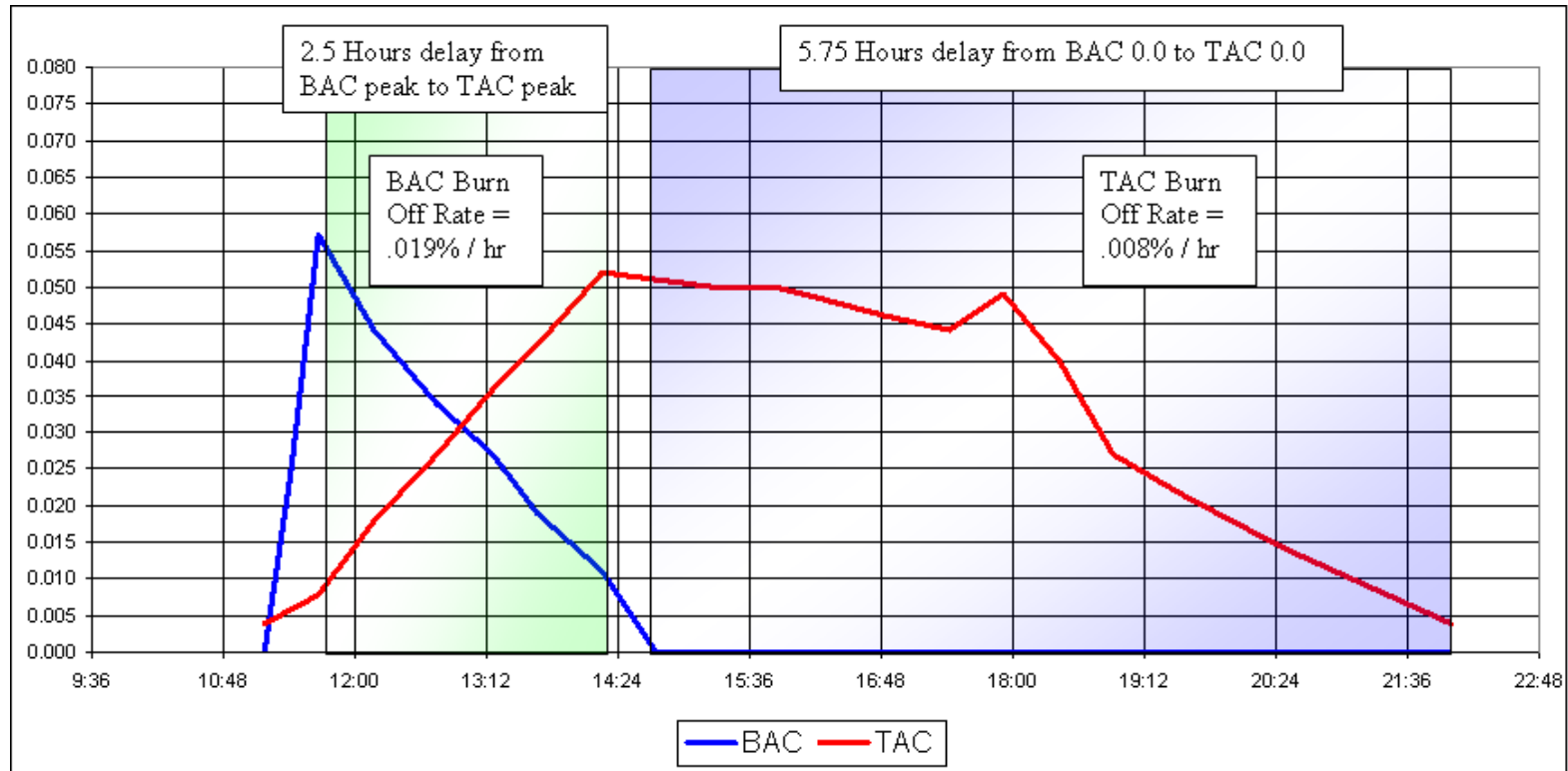
- Nicotine patches
- Birth control patches
- Scopolomine patches (for seasickness)
- Nitroglycerine for chest pain
- Blood pressure drugs
- Narcotic pain medicines
- Vick's Vapor Rub
- Muscle relaxants

# TAC and BAC

- TAC and BAC are related
- TAC absorption and elimination curves are similar, but not identical, to corresponding BAC curves
- TAC curves are delayed because it takes time for the body to metabolize enough alcohol to begin excreting it through the skin
  - Simultaneous TAC and BAC readings will almost never match
  - TAC peaks typically are lower than BAC peaks
  - A person's TAC will be elevated for a time after BAC drops to zero



# Transdermal: How Does It Compare to Breath Testing?

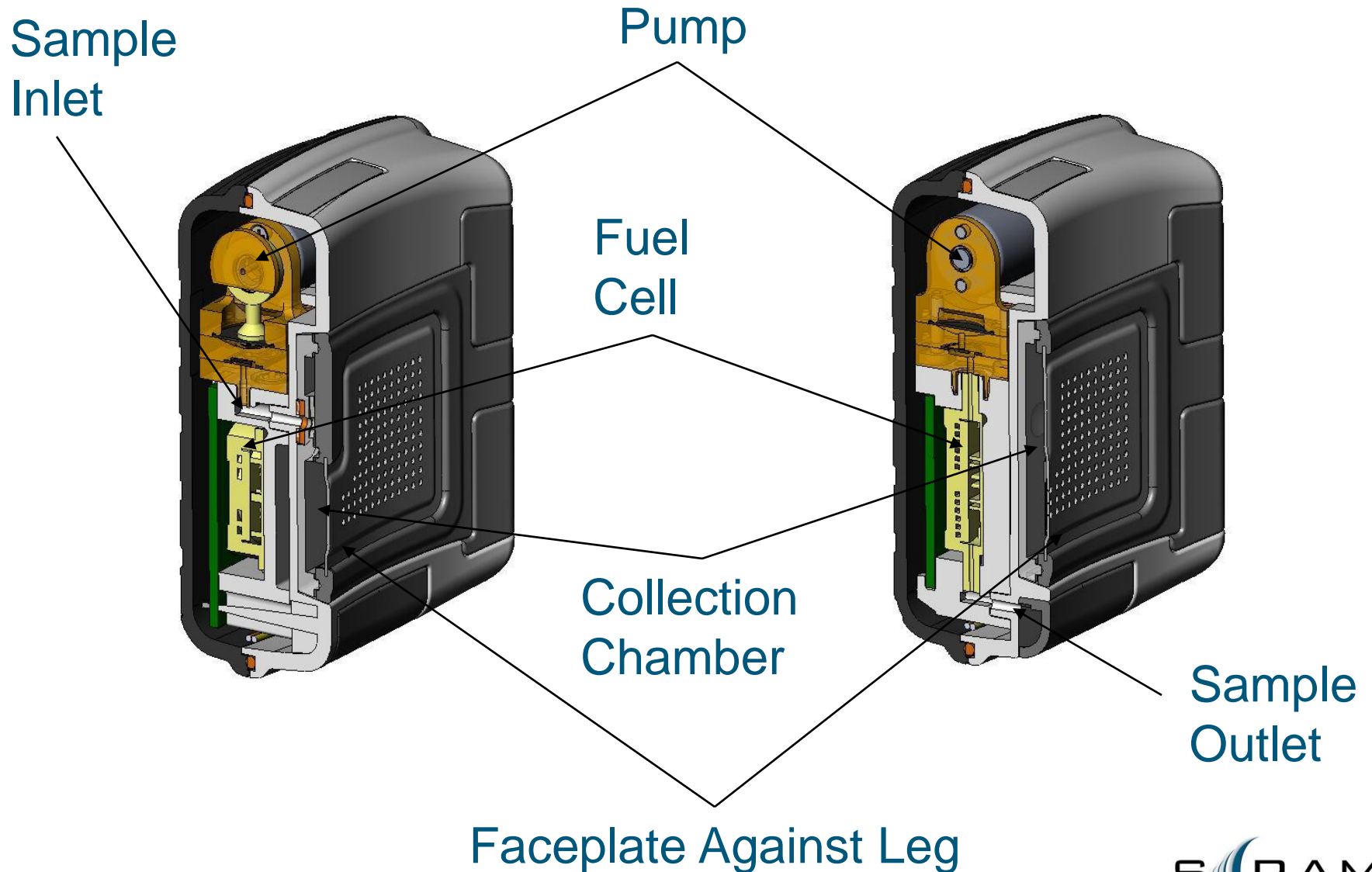


- Body's metabolism results in delayed transdermal readings
- Long-term monitoring is hit-and-miss with breath testing

# Sensitivity

- SCRAM does not “flag” an event until three consecutive readings exceed .02
  - The average person will not reach a .02 TAC unless the person has more than one drink in his or her system
  - This gives the wearer the benefit of the doubt

# How SCRAM II Works



# The SCRAM System



# What Does SCRAM Detect?

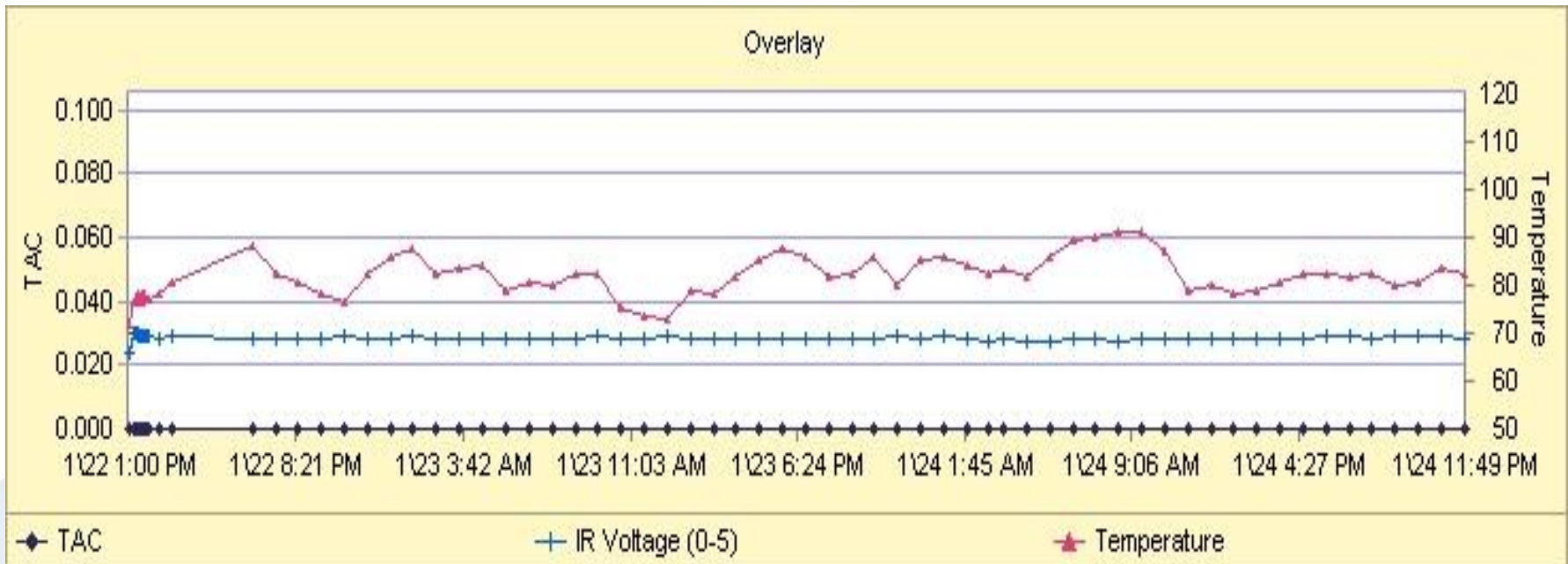
- Alcohol
- Tamperers/Obstructions
- Environmental Interferrants



# What does a Transdermal Test Measure?

## Three Tests With Every Sample:

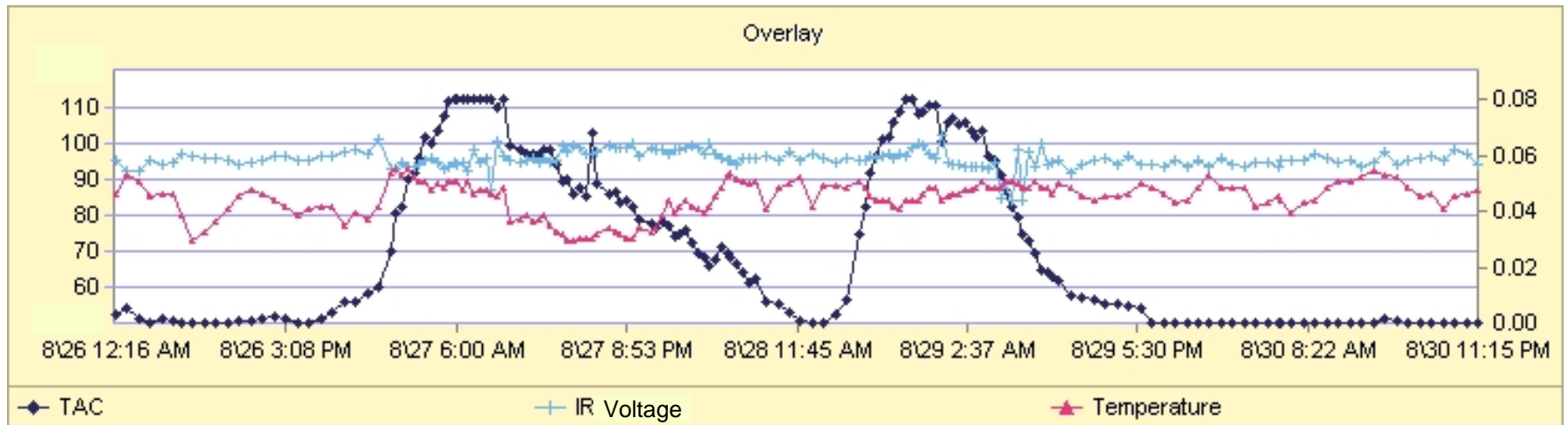
- Ethanol
- Temperature
- IR



# The Transdermal Alcohol Curve

Confirmable detections include at least two of the following criteria:

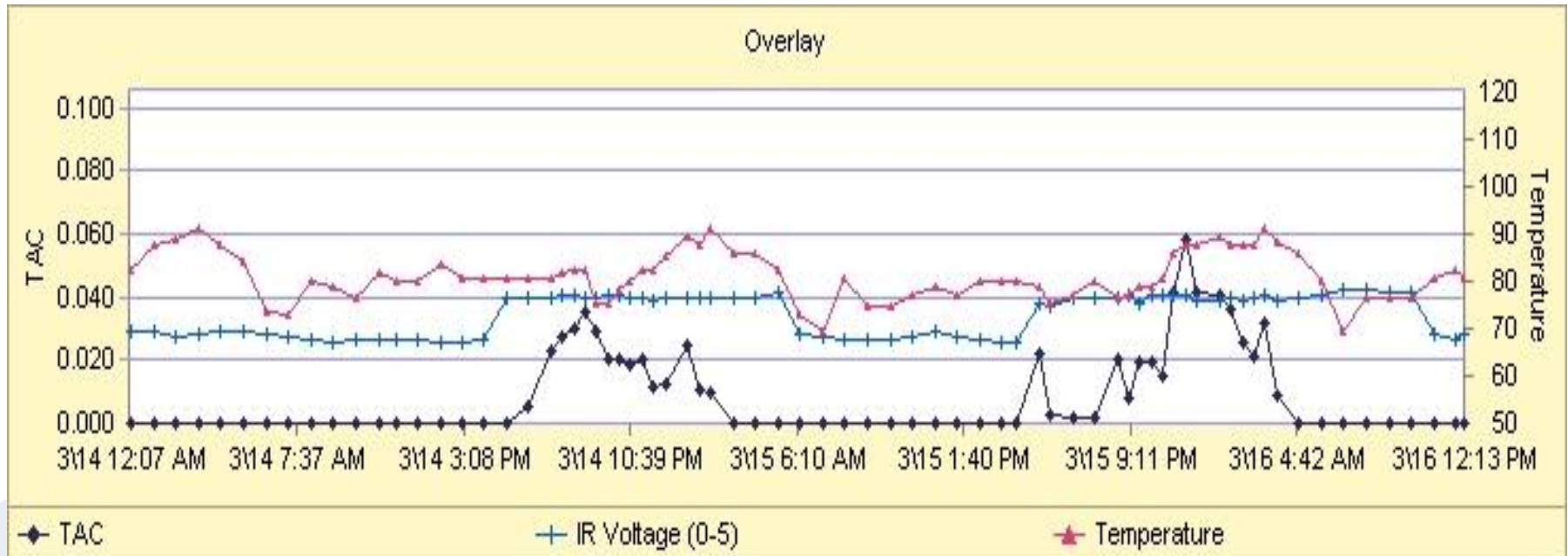
- Presence of an absorption curve
- Presence of a burn-off curve
- Obstruction in place of the absorption curve



Event #	Date	Drinking Start Time	Drinking Stop Time	# of Drinks
1	8/26/2004	4:00 PM	10:00 PM	10 Beers
2	8/28/2004	2:00 PM	8:00 PM	12 Beers

# Confirmed Noncompliance

SCRAM detected and verified both an obstruction and the consumption of alcohol.





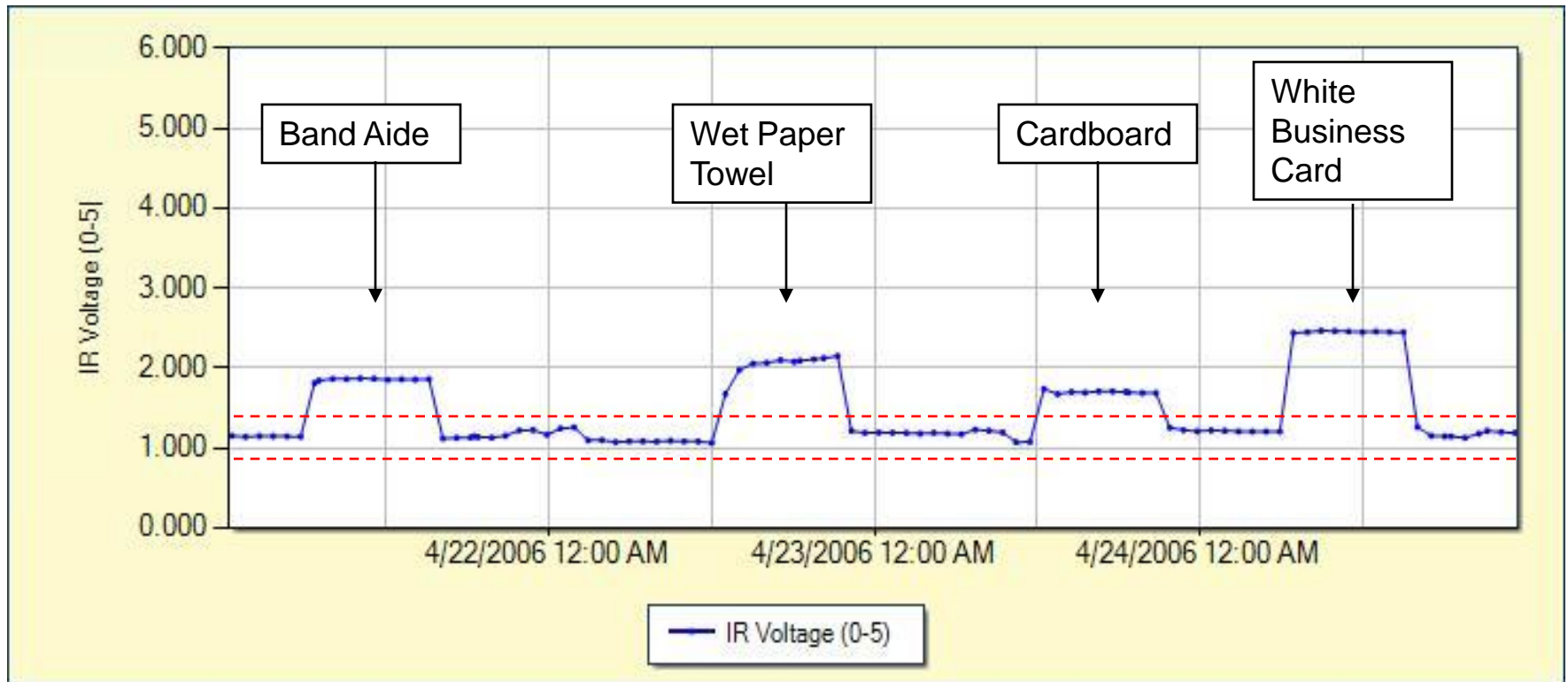
# Potential Sources of Error

- Tampering
- Interferants
- Mechanical errors
- Human error

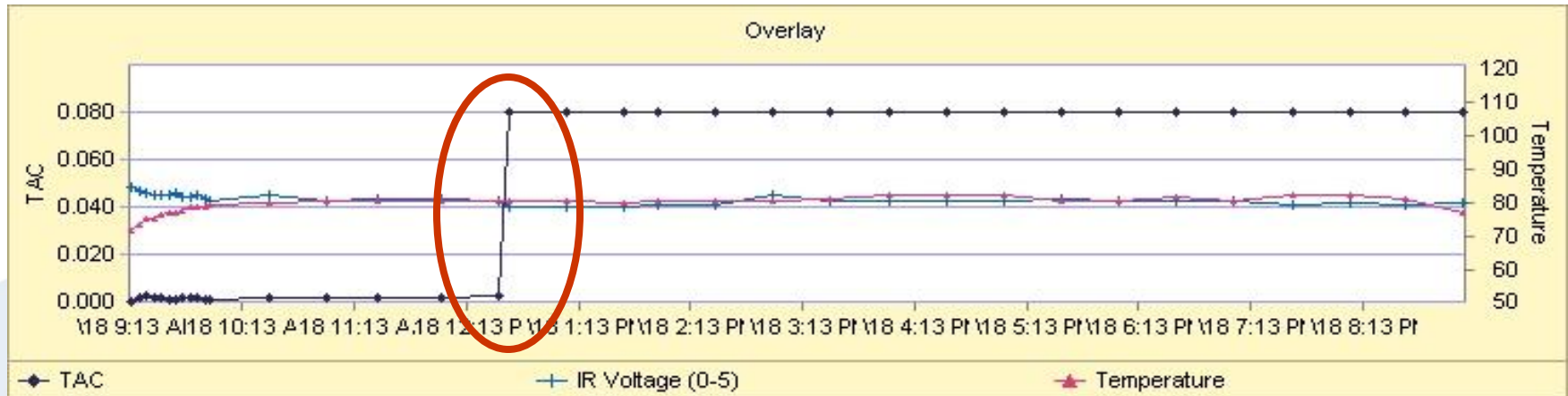
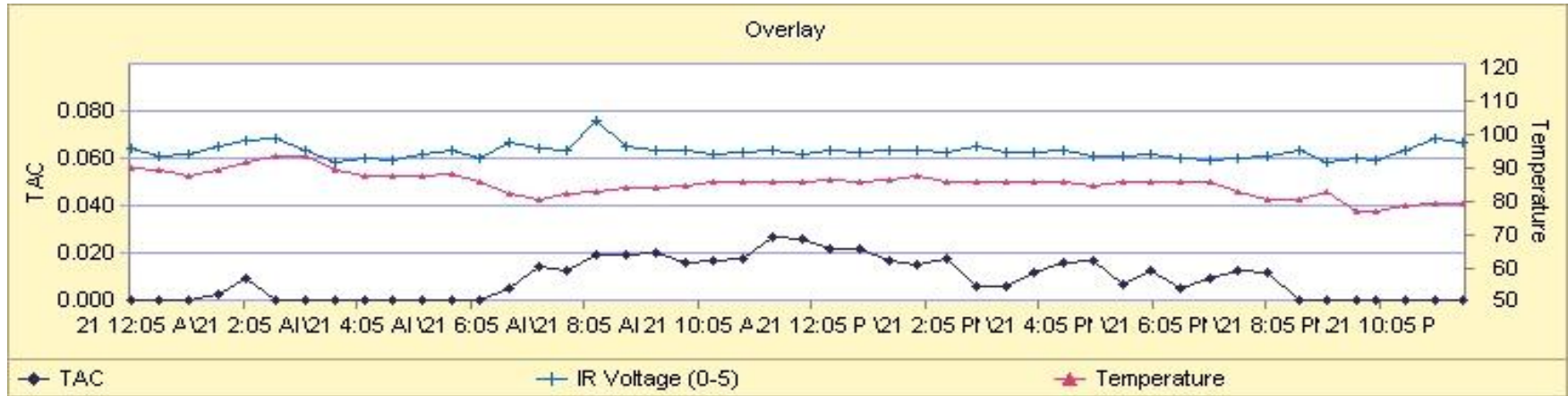
# Tampering

- SCRAM is designed to be tamper resistant. It features a:
  - Tamper strap and securing clip
  - Temperature sensor
  - Infrared sensor to detect obstructions
- The device flags potential tampers
- Technicians confirm tampers
  - They give every benefit of the doubt to the wearer
  - If they are not sure, they will ask the service provider to interview the wearer and inspect the device

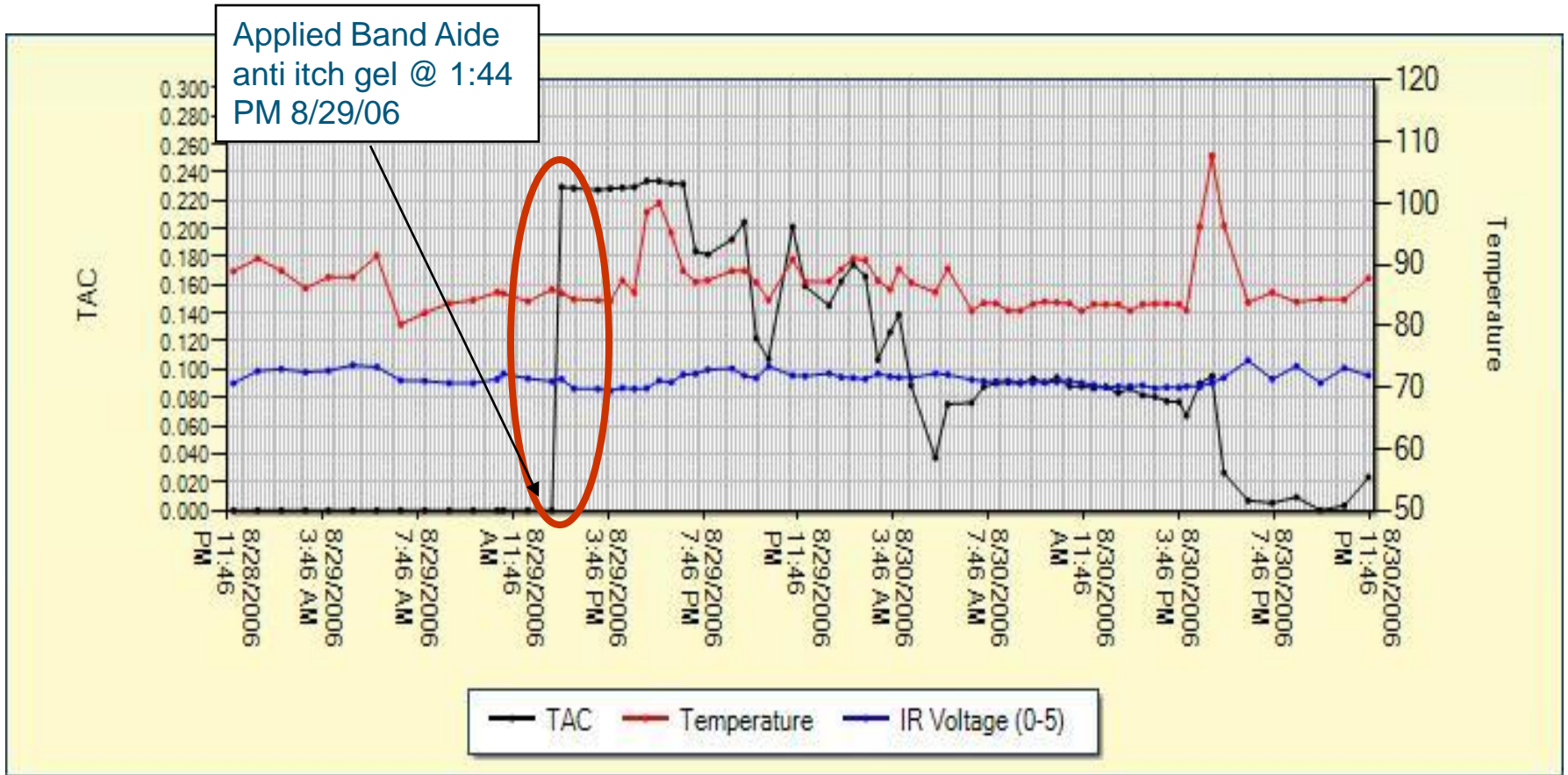
# Multiple IR Obstructions



# Interferant: Huskers Corn Oil Lotion



# Interferant: Band Aide Anti-Itch Gel



## Band Aide Anti-Itch Gel results:

Peak TAC = 0.229%

Absorption Rate = 0.573% per hour

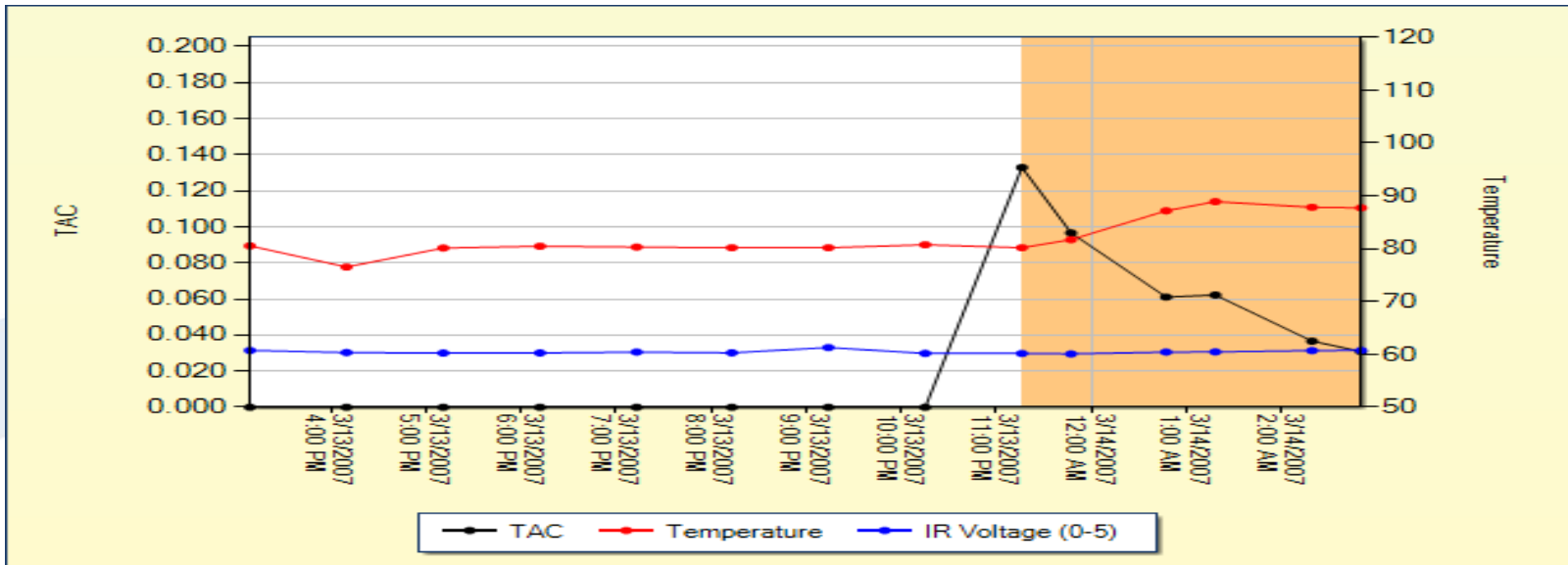
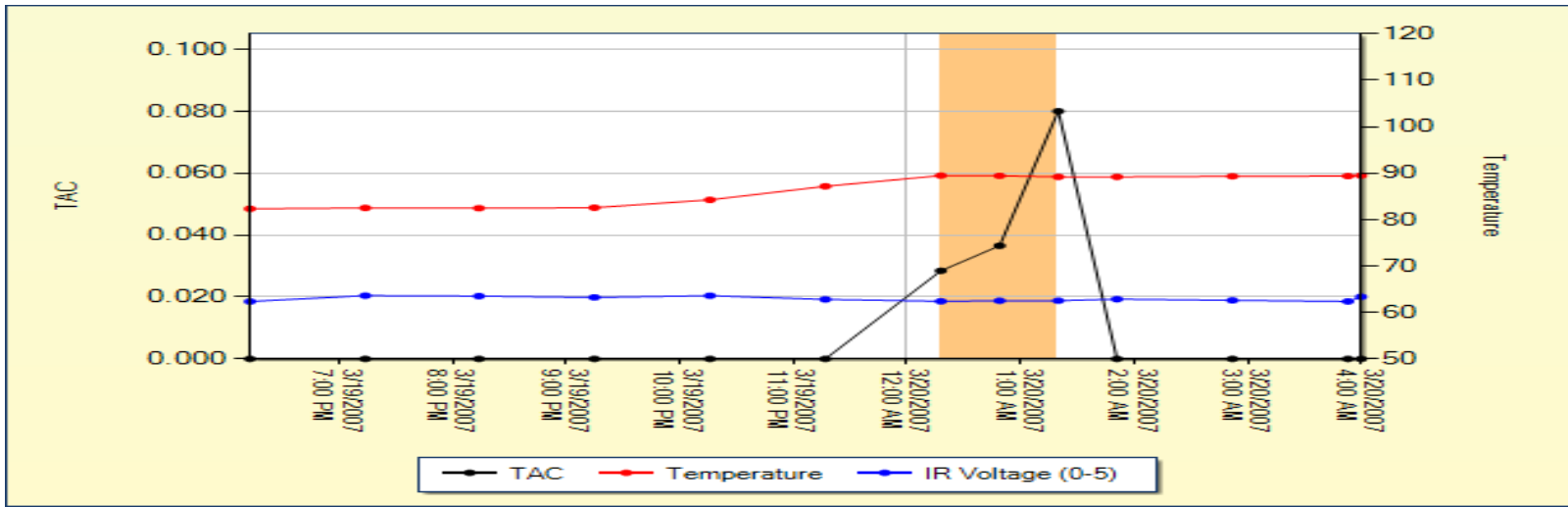
Elimination Rate = 0.009% per hour

Duration: > 31 Hours.

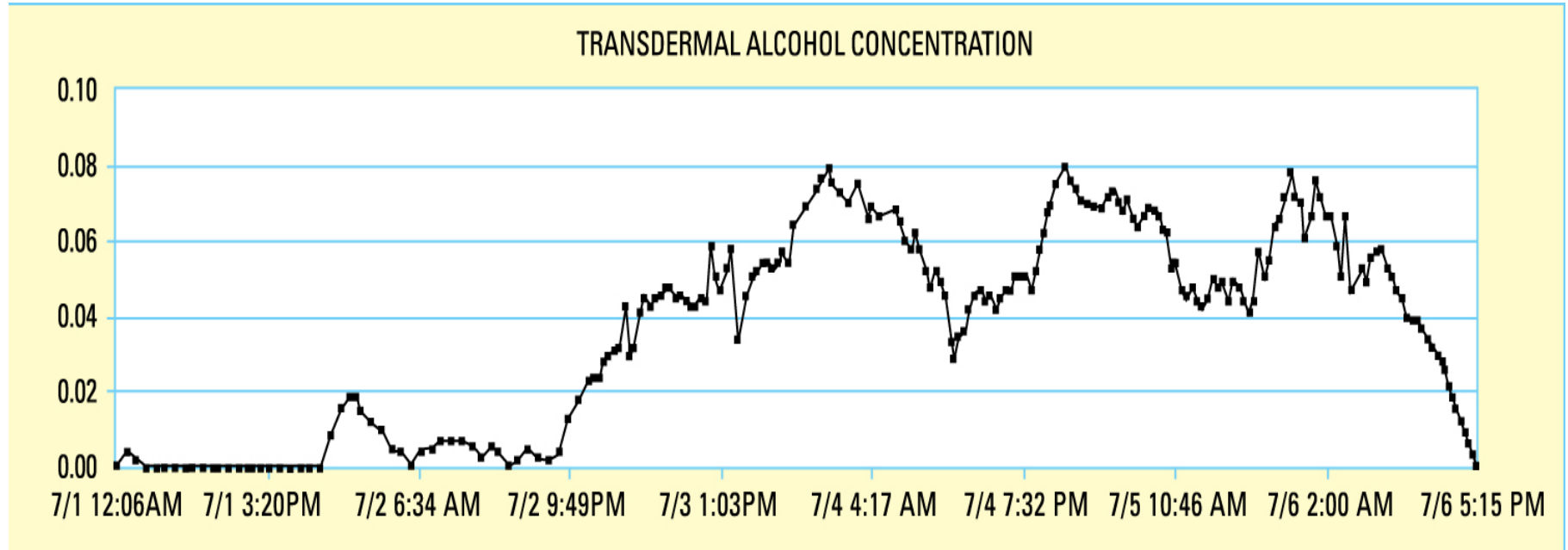
# Detecting Interferants: Using the Elimination

- Alcohol is eliminated in a fairly linear and predictably slow fashion
  - The average person eliminates between 0.015 to 0.020
  - An alcoholic can eliminate a bit faster, some as high as 0.033%
- AMS will not confirm events where the elimination rate is greater than 0.025% per hour
- Interferants are “eliminated” much more rapidly or much more slowly and produce distinctly different curves

# Environmental Interferants

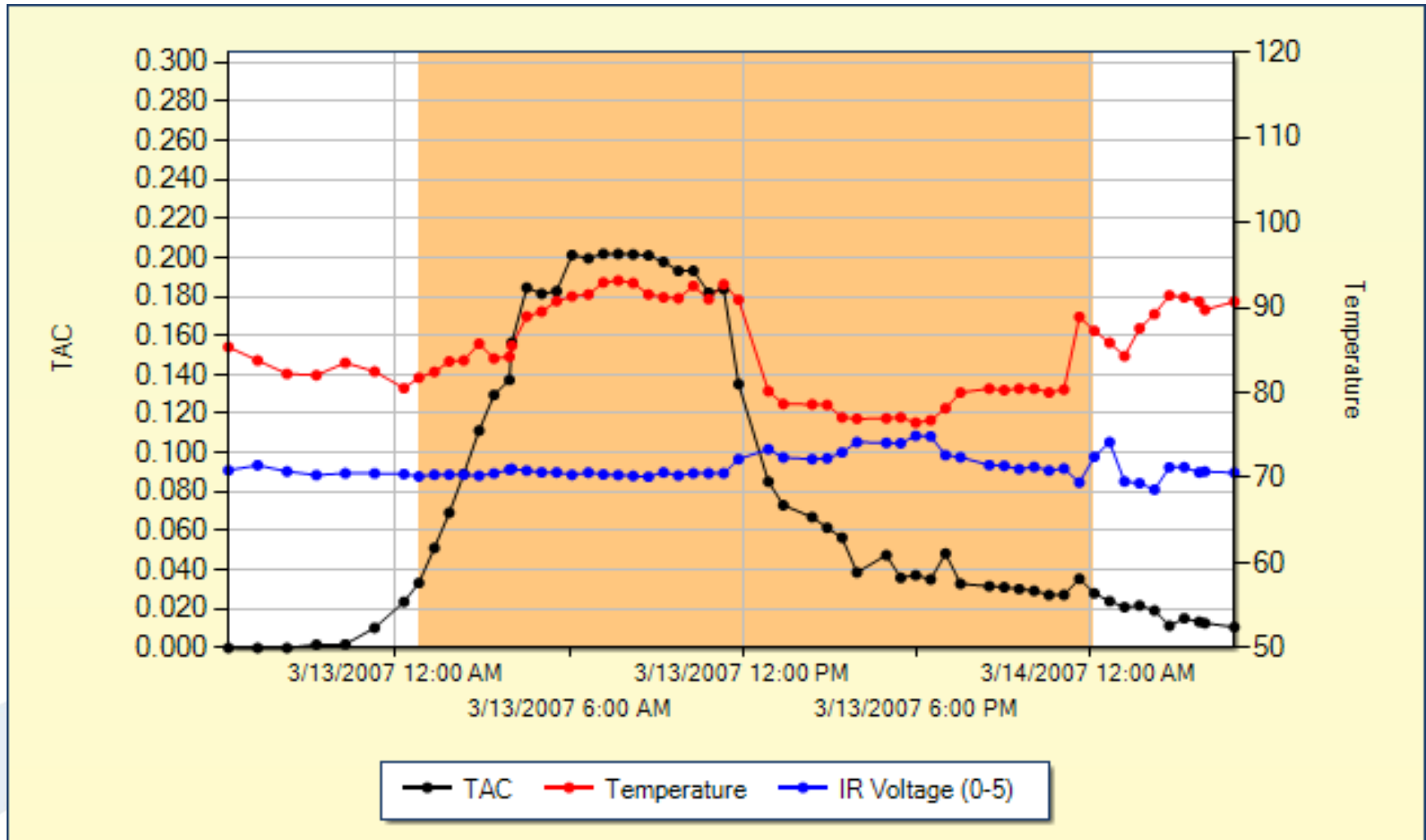


# Multiple Day Alcohol Event-Confirmed Alcohol Consumption





# High Level Alcohol Event



# Client Violation Report



## Client Violation Report



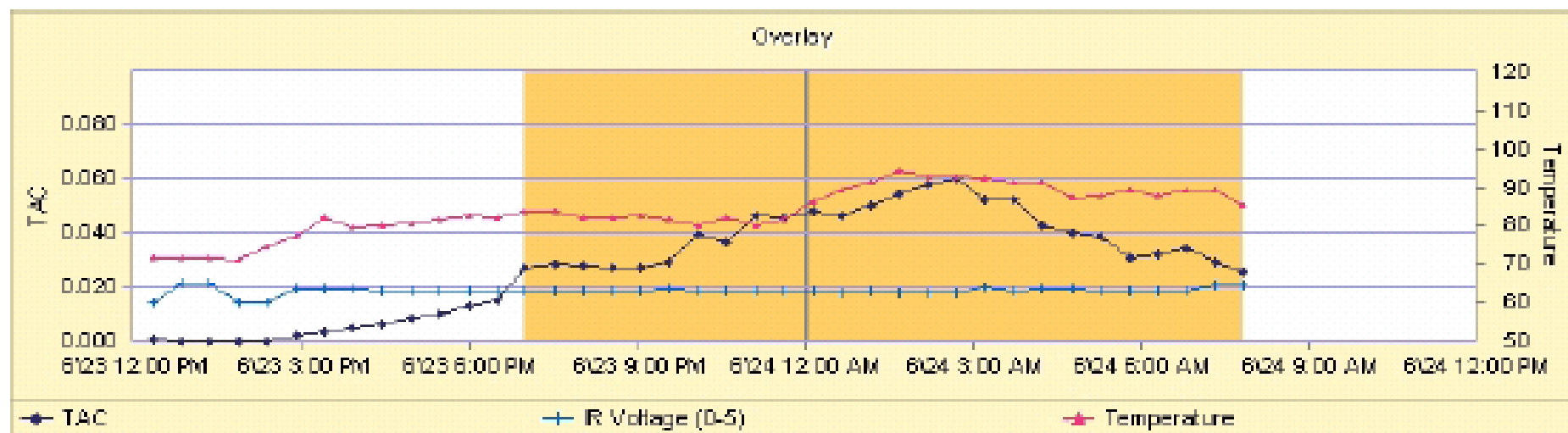
Client 3, NADCP

Volunteer

06/23/2006

Agency: NADCP 2006  
Agent: Fisher, Tobin

Case Number: NADCP 3  
File Number:  
Days On Program: 4  
Bracelet Number: 4705



### Alcohol Detected

Date/Time	Message Description	IR Volt.	Temp.	TAC
6/23/06 7:00 pm	Alcohol Detected	1.13	83.81	0.027
6/23/06 7:31 pm	Alcohol Detected	1.14	83.81	0.029
6/23/06 8:02 pm	Alcohol Detected	1.13	82.18	0.028
6/23/06 8:33 pm	Alcohol Detected	1.14	82.40	0.027
6/23/06 9:04 pm	Alcohol Detected	1.14	82.51	0.027
6/23/06 9:34 pm	Alcohol Detected	1.16	81.84	0.029
6/23/06 10:05 pm	Alcohol Detected	1.13	80.43	0.04

### Action Log

Date/Time	Action	Status	Username
6/26/06 6:10 am	Contact AMS Technical Svs Confirmable Client was Becky. Confirmed consumption.	Completed	rmcdonald

# Baked Goods and BAC: Bread

How much Rosemary Onion Bread would have to be ingested to equal 1-12oz beer (4% alcohol by weight)?

Calculate the Ethanol Dosage by weight:

$$1 \text{ beer} \times \frac{12 \text{ oz}}{\text{beer}} \times \frac{29.6 \text{ ml}}{\text{oz}} \times \frac{4 \text{ ml}}{100 \text{ ml}} \times \frac{0.789 \text{ g}}{\text{ml}} = 11.21 \text{ g}$$

Calculate the amount of Rosemary Onion Bread in Pounds:

$$11.21 \text{ g} \times \frac{100 \text{ g}}{0.980 \text{ g}} \times \frac{\text{ml}}{0.789 \text{ g}} \times \frac{\text{oz}}{29.6 \text{ ml}} \times \frac{\text{lbs}}{16 \text{ oz}} = \underline{\underline{3 \text{ lbs}}}$$

# Baked Goods and BAC

<b>Product</b>	<b>Contains Yeast</b>	<b>Ethanol Concentration (g/100g)</b>
Downey's Original Jim Beam Kentucky Bourbon Cake	Y	1.662
Rosemary Onion Bread	Y	0.980
Home Pride Wheat Bread	Y	0.470
Thomas' Sourdough English Muffin	Y	0.445
Great Harvest Apple Walnut Roll	Y	0.956
Sun Maid Raisin Bread	Y	0.276
QFC Chocolate Donut	Y	0.289

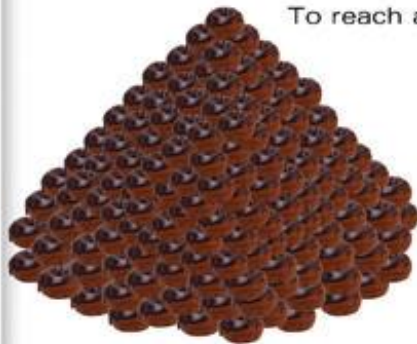
Reference: Barry K. Logan and Sandra Distefano. Ethanol Content of Various Foods and Soft Drinks and Their Potential for Interference with a Breath-Alcohol Test. *Journal of Analytical Toxicology*, Vol. 22, May/June 1998.

# Excuses, Excuses: Baked Goods

## The Chocolate Donut Theory

Can chocolate donuts and other foods make you drunk?

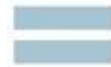
To reach a .065% BAC, a person would have to consume the following foods in one hour:



Chocolate Cake Donuts  
274 Donuts (2.4 ounces per donut)



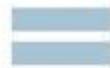
Chocolate Raised Donuts  
207 Donuts (3.2 ounces per donut)



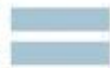
Sun Maid® Raisin Bread  
43.48 pounds



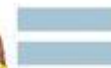
Thomas® Sourdough English Muffins  
26.96 pounds



Kentucky Bourbon Cake  
7.24 pounds



Home Pride® Wheat Bread  
25.52 pounds



4 beers  
(12 ounces per serving)

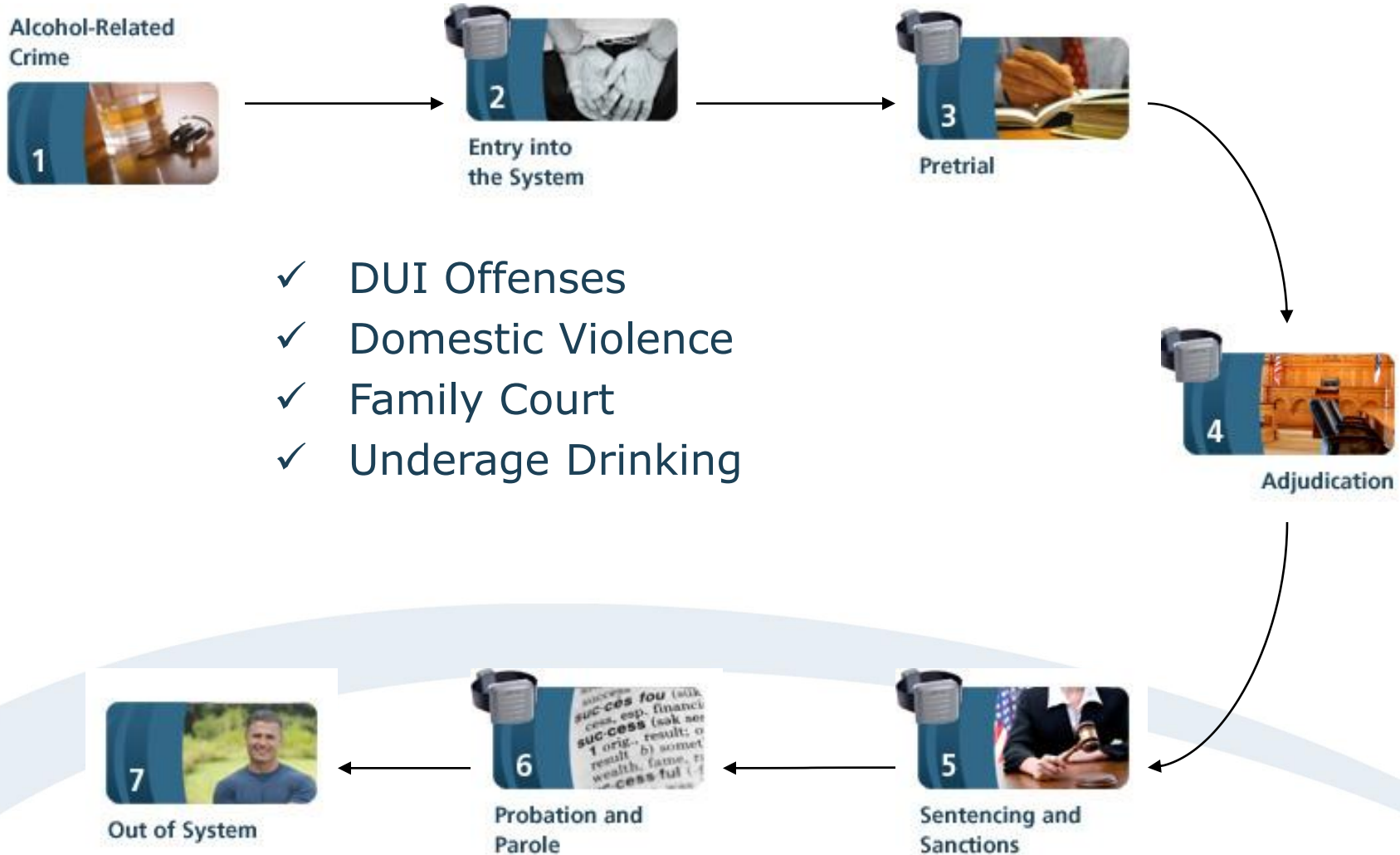
Source: "Ethanol Content of Various Foods and Soft Drinks and their Potential for Interference with a Breath-Alcohol Test," in the *Journal of Analytical Toxicology*, Vol 22, May/June 1998. By Barry K. Logan and Sandra DiCicco.

# AMS-Supported Court Hearings

- SCRAM technology is upheld in court hearings and challenges across the country
  - 50 evidentiary hearings in 19 States
  - 19 hearings resulted in Frye/Daubert rulings
  - 18 of 19 courts determined that evidence was admissible



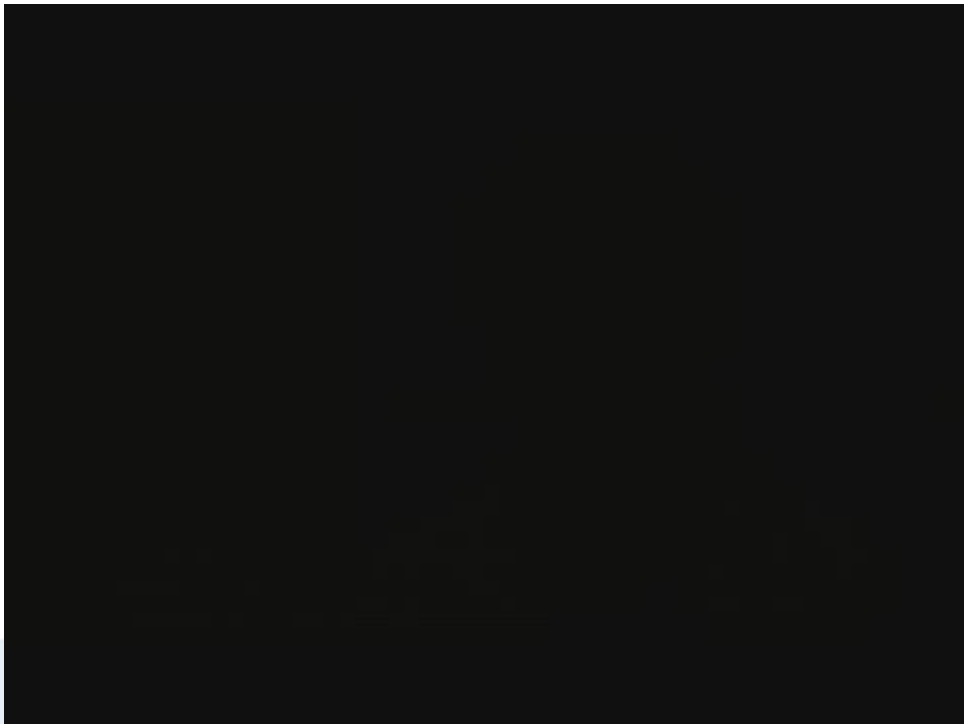
# SCRAM Usage in the Criminal Justice System



# SCRAM Programs Types

- Probation Supervision
- Pretrial Supervision & Assessment
- Diversion Program-Jail Depopulation Models
- Offender Reentry Programs
- Repeat Offender Programs
- Treatment Support
  - Pending Treatment Placement
  - Treatment Support Service
- First-Time DUI Offenders: Evaluation/Assessment Period
- Specialty Courts
  - Drug Courts
  - DUI Courts--Multiple, Felony-Level DUI Offenders
  - Family & Domestic Violence Courts
- Family Reunification Programs
- Underage/Campus Alcohol Programs





# Questions & Answers

*Thank you for your time*