

Notes on Matthew Malhiot's seminar

“The Intoxilyzer 8000 and Florida Software Vers. 8100.27: Understanding the Instrument and Interpreting the Results”

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Section 1 – Introduction

- Malhiot stated that one of the reasons he left FDLE was because of the budget cuts being made to FDLE
- Has issues with what defense attorneys were and have been taught

- According to Malhiot, there are two switches that are currently turned “off” in the new (.27) software; meaning this information is not printed on the affidavit generated by the I-8000 at the conclusion of a breath test
 - These switches could be turned on
 - Volume (which is noted on the subject test data found on the FDLE website)
 - Preliminary results (which would show the breath results on the I-8000 display once the sample is given)
 - Stated that the reason these fields do not appear on the affidavit is because Laura Barfield did not want this information to be printed
 - Says that Laura’s concern is that if the subject (or operator) can see the result when blowing into the instrument, then there is potential for the subject (or operator) to manipulate the result
 - Malhiot said that “this makes sense”
 - However, he says software version 8100.28 will print the breath sample volume on the affidavit

- I-8000 evaluation process
 - In discussing the evaluation of the I-8000 in Florida, Malhiot stated that two (2) instruments had to be submitted, but the rules did not require both to “pass”
 - One instrument was used as a “drop” instrument, meaning that the instrument was dropped during use several times to see if it would affect the instrument
 - During the evaluation process, Malhiot stated that both instruments “broke”
 - During mouth alcohol testing, one instrument started smoking
 - Evaluation was stopped and the instrument was fixed by CMI

- I-8000 software numbering
 - Brian Faulkner wrote the Florida specific software
 - Each change in the software (beta test versions) was given a new version number

- This explains why the version numbers are so high

Section 2 – The Instrument

- Breath Test Operators are scared to say “I don’t know”
- Malhiot stated that a person needs a “PhD” to conduct breath tests; “Push Here Dummy”
- Law Enforcement cannot use the printout from the I-8000 internal printer; the breath results must be printed on the affidavit (per FDLE rules)
- Malhiot stated he “always” replaced the O-rings whenever he was called out to check an instrument
 - NOTE: If this is the case, then this should be listed on every field note report Malhiot completed on any instrument he inspected or serviced
- Stated that the Guth 34C simulator is the oldest simulator used
- Malhiot advises for defense attorney to get information on the simulator used by the agency, such as the make and model simulator used, and when (or even if) the simulator was calibrated
 - However, he notes that the rules do not require the simulators to be calibrated
 - Malhiot also stated that simulators should use a mercury thermometer for temperature measurement (even if the simulator has a digital thermometer)
- Malhiot advised attorney to confirm that the serial number on the regulator for the dry-gas standard matches the serial number of the instrument
- Malhiot stated that the agency/inspector must keep the Certificates of Analysis of the dry gas standard for three (3) years from the date the dry gas was received
 - Malhiot questioned if the agency/inspector even know when the dry gas was received
- Malhiot noted that changing the dry gas cylinder during a breath test or agency inspection only changes it for that breath test or agency inspection; thus the information that the dry gas cylinder has been changed is not noted by the instrument
 - The dry gas cylinder must also be changed under the “Cylinder Change” menu option
- Stated that the standard among the dry gas standard manufacturers are not the same
 - Air Liquide standards are not the same as Scotty Gas standards
- Malhiot stated that he is probably the only defense witness qualified to take the I-8000 apart
 - NOTE: This is somewhat misleading, since the defense is able to subpoena and call as witnesses from FDLE that are just as qualified to maintain or repair the Intoxilyzer
- States that the “path of least resistance” valve is an issue with instrument; but did not go into much detail about it
- Malhiot stated that he, along with FDLE’s Roger Skipper, “designed” the I-8000 (but that it really doesn’t matter)
- The infrared light pulses through the chamber at 2 hertz (2 times per second)
- Describes the two micron band filters as “Christmas” filters, because one is green and the other is red

- There are “shims” which hold each of the filters in place, since the filters do not fit exactly on the detector

Section 3 – Technical Data & Infrared Absorption

- The RFI filter is not tested by the Agency Inspector, Department Inspector or during diagnostic checks
 - However, according to Malhiot, RFI interferes with the instrument’s measurement “very rarely”
- Malhiot admits that the I-8000 is “pretty good” but “not perfect” for detecting ethanol and not other alcohols
 - Malhiot should admit that nothing is “perfect”
- Malhiot tested the micron band filter in the I-8000 with a micrometer and found the measurements to be “9.376” and “3.476”
- Malhiot stated that initial FDLE research shows that the I-8000 gave measurements on substances other than ethanol; but admits that it is rare for it to do so
 - Admitted that these results came from simulators, not human subjects
- At the 3.476 micron band alcohol absorbs at 45%
 - No other substance is the same as alcohol at this wavelength
- If the measurements from both micron band filters are not within 10% of each other then the substance being measured is flagged as an interferent

- Malhiot stated that the number one excuse for results being “out of tolerance” are the simulators being used
- Although the Breath Test Operator and Agency Inspector cannot currently change the breath tube; FDLE is (or at least was) looking into changing the rules
- Malhiot stated that the length of time the subject is told to blow into the instrument does not matter
 - One second of 3L of breath is the same as 10 seconds of 3L of breath
 - However, it would be very difficult for the subject to give 3L of breath within one second
- Malhiot stated that the I-8000 reviews sample results in groups of three to look at the slope
 - The instrument must see “flow” for at least once second to turn the electronics on
 - Malhiot stated that 1.75 seconds is the quickest time in which the instrument can give a reading
- Malhiot stated that from a scientific standpoint, “it makes sense to get rid of volume”
 - If a subject gets a proper slope before 1.1L of breath volume, then it doesn’t matter
 - “You could get rid of valid breath tests” by requiring the volume to be 1.1L
 - This is based on 200k tests
 - NOTE: So, by actually requiring a volume of 1.1L of breath, Malhiot states that other test results, which may not have proper volume, may nonetheless be valid results indicative of the subjects blood alcohol content; thus the volume requirement actually inures to the benefit of the defendant
- Dry gas standard cannot be used below 32 degrees

- If used once below 32 degrees, the entire cylinder is compromised
 - If it is not used, and later reheated, then the cylinder will be okay to be used
- Malhiot states that FDLE “shouldn’t calibrate at the same levels” as the agency inspection; (0.00, 0.04, 0.10, 0.20, 0.30) using different simulators and dry gas
- I-8000 will report a result from 0.007 to 0.600
- Malhiot (personally) believes that any breath alcohol test should automatically subtract .005 from the result
 - NOTE: Malhiot’s personal beliefs are of no consequence; Malhiot has testified several times while working with FDLE that the I-8000 produces accurate and reliable results (without subtracting .005 from the result)
- If a cylinder from AirGaz is marked on the Certificate of Assurance as being .082, then this cylinder is for a Portable Breath Test (PBT) instrument, not the I-8000
- Admits that the I-8000 has a Digital Volt Meter (DVM) to indicate whether a subject spit into the instrument
- Malhiot states that the mouth alcohol detector in the I-8000 is not fool proof
 - But he admits that the mouth alcohol solution used by FDLE will dissipate within 6-8 seconds
 - Possible areas of concern is the lot numbers and expiration dates for the mouth alcohol solution and acetone solution
 - There is no requirement that the expiration date of the mouth alcohol or acetone solution be entered, so how can a defendant know that it was not expired?
 - Admits that Florida adds 5 minutes to the nationally used period of 15 minutes
- Malhiot admits that an interferent must be capable of being in a living human
 - He has reviewed the materials from Dr. Stefan Rose’s experiments and stated that the substances used to test the instrument in his study would rarely (if at all) be present on the breath of a living human being
- Ambient fails results is the second air blank is greater than .019 from the last air blank result

Section 4 – Breath Test Operators, Agency Inspector and Department Inspector Menu Options

- Login records
 - Pressing ESC twice rapidly results in a login record being created
 - Malhiot stated that some agencies use the I-8000 as a copier to print copies of breath test affidavits
 - There is way to verify that the person typing is actually conducting the test
 - Malhiot admits that you cannot tell if a plug pull occurred by looking at login records; “but it can show that an inspection was not conducted without a login record”
 - During Agency Inspections, a login record is created for Diagnostics, Gas Cylinder Changes, Inspection Tests, and Control Tests
 - Each instrument has a unique password; not the person

- During internal control tests the light source is reduced electronically to artificially create an .08 reading
- Diagnostic Tests, Wet Control Tests and Inspection Tests results are all uploaded to FDLE
- Stability tests (accessed through the Control Testing sub-menu for the Agency Inspector, allows the Agency Inspector to run 2-20 tests, but the results are not uploaded to FDLE
- Malhiot does not like the digital thermometers with the mercury thermometers
- Malhiot stated that “90% of problems in inspections are with simulators and operators”
- Anytime an instrument is shipped, the instrument should be disabled
 - This can be done by the Department Inspector through the Department Inspector Menu

Section 5 – Instrument Messages

- Malhiot states that a SLOPE NOT MET result is not a refusal because a sample was provided
 - However, a refusal is a failure to give two valid samples, and SLOPE NOT MET is not a valid sample
- INT results mean that the instruments two filters are seeing different results, more than 10% in difference
 - If this occurs multiple times, there could be a problem with the instrument or the subject
- In regards to the different volume issues that occurred with the 8100.27 software, Malhiot stated that he “has reproduced this in the lab”
 - Specifically, Malhiot stated that “I have personally reproduced every one of these scenarios”
 - It is not necessarily a software problem; the software was not programmed to handle these scenarios
 - Malhiot stated that “no one can blow for longer than 15-20 seconds
- Control Outside Tolerance messages
 - Malhiot stated that this occurs because the instrument wasn’t purged well and the instrument creates a new zero reference
 - Malhiot admits that “this is to the benefit of the defendant” and that it usually occurs when a subject is above a .17
 - However, Malhiot admits, “the dry gas will always be accurate”
- Malhiot stated that FDLE does not meet the national standards on the .02 agreement
 - The national standard requires samples must be consecutive and within .02 of each other
 - Malhiot says that FDLE is looking to change the standard, and if the results are not within .02, a completely new breath test will be required; FDLE is also looking to have the results be 10% of the mean of the results instead of using the .02 agreement (since the mean would always be the same at any breath result)
- RFI
 - Malhiot admits that the I-8000 detects Nextel and other cell phones very well

- However, there may be issues with other instrument such as police radios, wireless microphones, laptop computers, dead-man GPS systems; since they do not have to be transmitting to have a signal
 - Malhiot admits that he has never seen RFI interfere with a breath sample result during a breath test, only during research (and only then, they had to disable the RFI detector)
 - Malhiot stated that it is physically impossible to check all ranges of RFI
 - However, the use of all the other safeguards show that RFI is not affecting the results
- ISP (Improper Samples)
 - Malhiot stated that ISP results are the fault of the Breath Test Operators
- Malhiot recommends that any subject with a breath test result of .30 or more should be taken to the hospital or seen by a doctor
- Software Version .26
 - Malhiot stated that Laura Barfield’s letter regarding the software upgrade was “deceptive”
 - He described it as FDLE having an “Oh, Shit!” moment

Section 6 – Limitations of Forensic Breath Analysis

- Malhiot does not like the title “Breath Test Operator”
 - He prefers they be called “Forensic Breath Analysts”
 - However, he is against officers being part of the MADD 100
- Malhiot stated that “90% of Agency Inspectors do not have the checklist in front of them” when performing inspections
 - “The day they completed the class is the day they stopped learning
- The Subject
 - Malhiot stated that being cuffed, stuffed and taken to jail must be very stressful for a subject
 - “Belching and burping is not an issue”
 - Malhiot asks, “How can you expect them [defendant] to blow properly?” when they’ve never done it before
- The Instrument
 - The 3 micron band result is never displayed
 - Admits that the I-8000 does not subtract interferents; but that this is not a limiting factor and actually better for defendant safety
 - Malhiot stated that “nobody can say the result is what it was at the time of driving”
 - He was then reminded of the Florida cases of Hass and Miller, which states that extrapolation of test results to the time of driving is not necessary, the results are presumed to be what it was at the time of driving
 - Admits that there is nothing from stopping a Breath Test Operator from entering into the instrument an “earlier” time for when the 20 minute observation began

- Stated that the “path of least resistance” valve is the instrument’s biggest limitation, since there is no closure of the valves
 - However, he admits that this is not fatal to the test results; it is just not as good as the I-5000
- The Equipment
 - Suggests defense attorney file motions to inspect the Agency Inspector’s equipment
 - Should confirm that the Agency Inspector is using “Class A” glassware for measurements and that the simulators are attached to the instrument with “Tygon” tubing
 - NOTE: If you are not familiar with these terms, speak with your Agency Inspector
 - Advises defense attorneys to ask Inspectors during deposition or on cross-examination what type and model of simulator is being used during inspections
 - States that Guth 34C simulators cannot be used in Florida because it doesn’t measure to 2/10 of a degree
 - NOTE: Because the temperate range of the simulators must be between 33.8 and 34.2 degrees, the thermometer of the simulator must be able to measure to 2/10 of a degree
 - Stated that he knows for sure that simulators in Bradford, Jefferson and Marion counties are not using the correct simulators

Section 7 – Agency and Department Inspections

- Malhiot admits that the instrument is “pretty damn durable”
- States that, in his experience, Agency Inspectors often wrote “Leak in Simulator” or “Cold Simulator” without knowing the real reason for the control outside of tolerance message
 - NOTE: Review applicable agency inspections and department inspections and field notes to see if Malhiot ever approved of an inspection where this comment was written or has he ever written this comment himself
- Admits that you cannot calibrate a mercury thermometer; however, you can get a Certificate of Calibration with an +/- error reference
 - Malhiot questions that if the temperature measurement of the simulator must be 34C degrees +/- .2, then how does FDLE expect it to be followed
- Malhiot suggests that defense attorney obtain copies of the actual Department Inspection signed by the Department Inspector, as that is the best evidence
 - The inspection records on the FDLE website is just the data
- Mouth Alcohol Tests
 - Malhiot stated that the “Alcohol Free / Mouth Alcohol” test is two-parts
 - If one part of the test has failed, the entire test will repeat itself, not just the part that failed

- Thus, it is possible for the mouth alcohol part of the test to fail, and the inspector, forgetting that now both parts of the test must be repeated (in a second test); he then introduces a mouth alcohol sample into the instrument, thereby failing the first part (the alcohol free part), of the second test; all of which would result in a non-compliance inspection resulting in the instrument being taken out of service until a Department Inspector is contacted
- Tolerance Ranges
 - Malhiot admits that the tolerance range of the highest alcohol reference solution (.20 must be between .190 and .210, inclusive) is the smallest at about 5%
- Regarding the rule that states that when the instrument does not comply with the FDEL/FAC Rules, the instrument must be removed from service and the department inspector notified...
 - Malhiot admitted that when he was on the rule-making committee, what was meant was that the Department Inspector should be notified before the instrument was put back into service
 - He also admits that the “spirit and meaning” of this part of the rule is for the Agency Inspector or Breath Test Operator to look, diagnose and correct what’s causing the failure
- Malhiot admits that the time of inspection listed on the inspection report is the time/date of completion of the inspection (not the beginning)
- Two things that are tested during Department Inspections (but not Agency Inspections):
 - Minimum Flow Check
 - Stated that this does not check the volume
 - Barometric Sensor Check
 - To adjust the gas cylinder pressure; usually done in areas of high altitude
 - Set to 1% millibars
- Malhiot stated that the “Agency Inspections is probably the best area of attack” for defense attorneys

Section 8 – Running a Breath Test

- Malhiot stated that “I’m an advocate for absolute compliance”
 - NOTE: But would have to admit that the rules only call for substantial compliance
- Malhiot stated that the last part of the definition of a valid breath test (“notwithstanding the foregoing sentence, the result(s) obtained, if proven to be reliable, shall be acceptable as a valid breath alcohol level”) is “built in to cover-up and fix mistakes”
- Admits that the “curricula is part of the rule”
 - But not part of the rule by law because it was not promulgated

- Malhiot says that the qualifications for breath test operators are not independently investigated or substantiated
 - BTO's shouldn't use the I-8000 warm up time to gauge the 20 minute observation because the instrument can warm up prior to the end of an actual 20 minutes

Closing Notes

- Malhiot charges \$450 for a case review and written report, where there is no video, and \$550 with a video
 - Malhiot stated he had a complete fee schedule, but it was not handed out
- Malhiot personally believes that GERD does not affect breath testing
- Source Code
 - Malhiot stated that there is only a battle for the source code because CMI refuses to give it
 - Admits that source code can tell you some stuff, but it is not the answer
 - When issues come up in breath testing, you don't call CMI for the code to find out what's causing the problem
- Malhiot admitted that he cannot testify that source code is necessary to understanding how the I-8000 operates
 - "Is it helpful? Yes. Is it absolutely necessary? No."