

STATE OF MINNESOTA
COUNTY OF HENNEPIN

FILED
CRIMINAL

DISTRICT COURT
FOURTH JUDICIAL DISTRICT

State of Minnesota,

Plaintiff,

vs

ORDER ON DISCOVERY MOTION

FILE # 27-CR-08-46085

Joshua Thomas Gadow,

Defendant

Defendant Gadow moves for an order requiring disclosure of the Intoxilyzer source codes in this criminal impaired driving case. Aware of the decision in *State v. Underdahl*, 749 N.W.2d 117 (Minn. Ct. App. 2008), review granted (Aug. 5, 2008), where the court emphasized that no showing had been made to support the claim that the requested material was relevant or would lead to information useful to the defense, Mr. Gadow has submitted a good deal of material, the pages of which (although I have not actually counted them) I estimate to number perhaps fifteen hundred to two thousand.

I have examined these. They are for the most part informative as to the questions raised in *Underdahl*, and often of great interest. The documents consist, *inter alia*, of scholarly articles, affidavits, transcripts of testimony of expert witnesses, and judicial opinions from several jurisdictions. From their particulars, and from their cumulative effect, I have no doubt that the source codes are not only relevant to this litigation (and to virtually any dispute involving Intoxilyzer evidence), but very likely indispensable to a proper hearing of such a case. There is, indeed, good reason to believe these source

codes will reveal defects in the Intoxilyzer device's operations of a significance that makes the evidence exculpatory and constitutionally subject to mandated disclosure by the prosecution, though no such showing need be made to support a simple discovery request such as that under consideration here.

These materials, considering primarily if not exclusively the sworn statements of experts whose credentials are excellent for the purpose, show (in very brief summary) the following:

1 – The Intoxilyzer is a complex, sophisticated device designed to measure the amount of alcohol in air samples. (Head and Workman, "Litigation in the United States", pages unnumbered)

2 – This device is "computer controlled;" it is, in fact, effectively a computer itself, or a complex of computers. (Ibid).

3 – The device, therefore, (and each "computer" it comprises), is controlled by "software," including the "source codes." (Ibid).

4 – These codes are the instructions that dictate to the device how it must operate. (Ibid)

5 – The machine itself has no autonomy, no discretion. It does what the software tells it. (Ibid).

6 – Therefore all similar machines governed by the same codes will operate identically (assuming no defects or variations unique to any of the machines are present). (Ibid).

7 – Virtually all software has defects. (Ibid).

8 – Such defects can cause malfunctions in the Intoxilyzer’s operations, and instances of those have been proved. (Ibid).

9 – Software will cause similar machines to reach identical results. A software defect, accordingly, can cause identical erroneous results in multiple machines. That is, similar results from several machines are, in themselves, no proof of accuracy except where it is known the software is defect-free. (Ibid).

10 – “A computer scientist... can frequently find defects in software by ‘reading’ the source code.” (Ibid). Codes may also be reviewed “automatically.” Either method can identify flaws in the source code which render Intoxilyzer results inaccurate. (Ibid).

11 – The process of translating “source code” to “machine code”, an essential part of the Intoxilyzer operation, involves numerous possibilities of error, in effect a result of ambiguities in instructions which can lead to contradictory or erroneous results. (Ibid).

12 – Faults inherent in and resulting from defective software or source codes may affect various aspects of the Intoxilyzer’s operation, including: A) determining whether a test was actually attempted or conducted, or “refused,” B) determining whether an “adequate” sample was given, C) determining whether the proper portions of the sample (“alveolar” air) are tested, and other portions excluded, D) determining that “interferents” (hydrocarbons) are properly excluded from the analyzing process (a failure to do which can result in improper elevation of a reading), E) determining whether a simulation is properly analyzed. These potential defects might lead to false and questionable readings, either as to quantity of alcohol or as to whether an inadequate sample was given (and thus a “refusal” committed).

13 – The machine’s ostensibly successful analysis of known samples or simulation gases does not demonstrate its reliability in analyzing unknown subject samples, for the latter may and often do contain other substances, not present in the controlled samples, which must be accounted for and eliminated from consideration in the subject tests. Since the samples are destroyed in testing there is no way to determine whether this function is properly performed, or if the device is capable of doing so without the codes.

It is notable also that the Intoxilyzer discards samples once analyzed; they are not retained to allow additional testing. This is by choice of the manufacturer and Intoxilyzer purchasers. It results in routine destruction of potentially exculpatory evidence. “Breath testing stands alone in the forensic sciences, as the only forensic testing method that prohibits verification and validation by virtue of the design of the process.” (Ibid). Moreover, no records are ordinarily kept by manufacturers or law enforcement agencies of defective tests; and there are no reporting mechanisms for failures. (Ibid)

The nature of computer construction and operation, both software and hardware, is so complex (and rapidly changing) that the potential for errors is enormous, the number of possible defects astronomical – literally in the millions or billions.

Many, if not most, if not all of these are virtually immune from detection unless the source codes can be examined.

One expert with sterling credentials has documented defects in an Intoxilyzer and said that “this obviously serious problem in data integrity makes it essential that the sources of the software be thoroughly examined to identify the source of these serious errors and their potential effect on all data.” (T. Burr. affidavit, December 17, 2007). In

another affidavit the same expert states that access to source codes is necessary to evaluate the functioning of Intoxilyzer, and “without access to those codes it is not possible to determine if the Intoxilyzer functions as designed or as approved by rule ” (Burr affidavit, October 11, 2007).

Another well-qualified expert states that because the manufacturer has not made the source codes available, the device’s “process” of breath analysis is not fully known, and “the exact process can only be determined by examining the source code of the software program running in the instrument ” (H. Myler affidavit, September 9, 2006).

Evidence was also presented that a different device for analyzing breath samples operated with a source code defect affecting the “slope detector” that caused numerous failures. (Simpson et al. article; Kierzek testimony transcript).

Moreover, e-mail correspondence between the Minnesota Bureau of Criminal Apprehension and CMI, the manufacturer, reveals that the Intoxilyzer’s determination of “deficient” breath samples varies according to the software being used, and it is unclear whether this problem has been satisfactorily corrected

Under present Minnesota law, a substantial (even alarming) portion of the truth-finding process in both criminal driving and civil licensing cases, otherwise normally performed by judges and juries, is effectively delegated to the Intoxilyzer machine, which is in turn a tool selected, obtained, maintained , and operated by the executive branch of government, more specifically its law enforcement branches, with the blessing (so to speak) of the legislature. Virtually no one who is directly involved in the courtroom aspects of these cases (police officers, prosecutors, defense lawyers, defendants, judges) has the scientific knowledge or training to understand how this machine works.

We are asked, in other words, to have faith in the manufacturer's and the executive branch's decisions and judgment in certain important respects, to assume that if a minimally trained police officer follows a number of relatively simple procedures in operating the machine, it will yield a reliable result both as to sufficiency of samples and alcohol readings. To the machine itself we largely delegate the gate-keeping function of deciding whether the machine is functioning correctly. The officer who testifies about the test (who is often the only witness) has no way to determine whether it is working properly, except from what the machine tells him. (We thus abdicate our non-delegable judicial duties, demeaning the separation of powers.)

But what the machine tells him (and tells a fact-finder) is what the programmers designed it to say. Even setting aside any suspicion of deliberate deception, assuming no bad faith is involved, this programming (which for present purposes we may assume consists in significant part of the "source codes" in question) could lead to undetectable misrepresentations that are virtually conclusive of the result in litigation.

For example, (to state only one), in a state where the decisive blood-alcohol reading is .08, any quantity below that would be exculpatory. The controlling software for the device could be designed to instruct the machine to round any reading slightly below that (say .07999) to .08. Since this instruction would be only in the code, and in no way detectable from either examination of the machine itself, questioning of the operator, or other reasonably available means, it would be shielded from discovery, disclosure, or diagnosis. Innocent people would be convicted, with no recourse.

We have therefore a situation where juries and judges are asked to accept the word (virtually the verdict) of a machine that a person is guilty of a crime (of either driving with more than .08 blood alcohol or of refusing a test), and we are asked to accept these determinations without being allowed to know how the machine reached its decision, or whether it did so reliably. Although it is not the direct and immediate question here, this raises a serious concern that the accused is denied the right to confront his accuser (the machine), and the due process right to present a defense. The machine's hearsay statement is not subject to cross-examination. The machine itself destroys (or does not preserve) the sample, making further testing impossible.

But this proceeding is a mere discovery motion, a simple and reasonable request by the defense to examine the fact-maker and surrogate fact-finder. Not only is the defense entitled to this information, defense counsel would arguably be guilty of ineffectively assisting a client for not demanding the information.

No even marginally persuasive or even plausible reason to deny this threshold investigative request has come to my attention, either in the evidence or arguments in this case, or in the opinions of the Minnesota and other courts that I have examined.

It is worth repeating that this is a mere, reasonable discovery request, a routine pre-trial step in preparation for litigation or negotiation, a perfectly rational inquiry into the foundation for the result of a scientific test. The refusal of the manufacturer, and the refusal or inability of the prosecution to comply with these requests, and ensuing court orders, have caused totally unjustified disruptions in a justice system that is already overburdened by lack of adequate funding and resources. The making, opposing, hearing, deciding, and appeals of these motions have consumed untold amounts of time

of all involved, have caused a great deal of expense, have prompted certain unwise judicial policies designed to deal with the volume of these motions, have resulted in a plethora of often conflicting, often contradictory decisions in both trial and appellate courts, have prevented the resolution of cases within reasonable times, and have in general as a consequence diluted the quality of justice and besmirched the appearance and reputation of the machinery of justice. All of this is direct result of a private, profit-making corporation's desires and efforts to withhold from courts pertinent information about the product by which it makes its profits, a product which is incidentally capable under the current state of the law of convicting people (in very large numbers) of crimes. That this is true – and not the plot of a futuristic novel or screenplay – is astonishing. It is also shameful, since it is for the most part easily avoidable, by proper orders in individual cases requiring disclosure on pain of suppression or dismissal. Instead, however, the courts have too often been willing to allow an interested non-party to foul the gears of justice, and leave countless otherwise resolvable cases in a limbo of uncertainty, creating an unnecessary back-log of cases that will continue voraciously to consume resources.

The defense motion is granted.

The source codes shall be produced to the defendant within ten days of the date of this order or the test results shall be suppressed.

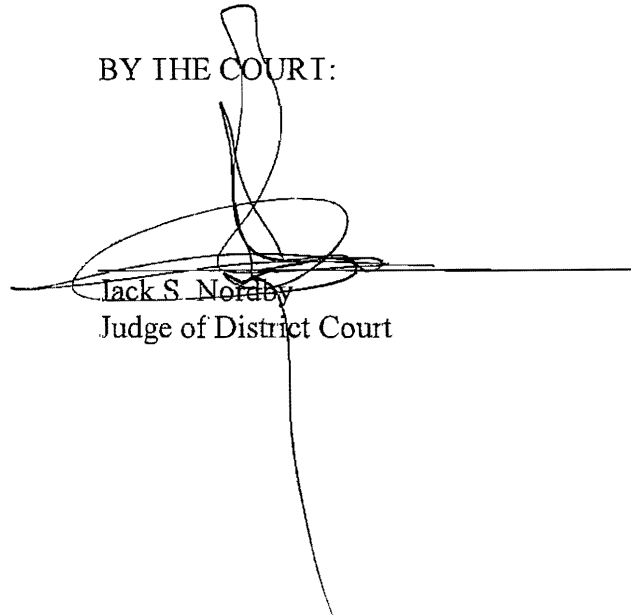
It shall be no excuse for non-compliance that the prosecution does not have the source codes. This issue has long been familiar. The prosecution is the proponent of the evidence, and cannot frustrate the defense's right to the evidence (and this court's order) either by failing to obtain the source codes, or by agreeing or acquiescing with the

manufacturer's unjustified refusal to produce them. This case may proceed the old-fashioned way, by presentation of admissible evidence to human fact-finders.

IT IS SO ORDERED.

BY THE COURT:

Dated: November 18, 2008



Jack S. Norby
Judge of District Court