STATE OF MINNESOTA

IN SUPREME COURT

A11-0560

Scott County

Anderson, G. Barry, J.

In Re: Source Code Evidentiary Hearings in Implied Consent Matters,

Dissenting, Page, Anderson, Paul H, Meyer, JJ.

In Re: Source Code Evidentiary Hearings in Criminal Matters.

Filed: June 27, 2012
Office of Appellate Courts

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Mark J. Schneider, Jeffrey D. Bores, Chestnut Cambronne PA, Minneapolis, Minnesota, for respondent State of Minnesota Prosecution Liaison Counsel.

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S Y L L A B U S

1. The district court did not abuse its discretion when it denied appellants' motion to exclude all test results produced by the Intoxilyzer 5000EN in their individual trials or hearings because, at an evidentiary hearing held in accordance with Minn. R. Evid. 104, the government established by a preponderance of the evidence that

Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable and unaffected by alleged source code errors.

2. The district court did not violate appellants' due process and fair trial rights when it made a pretrial determination that evidence relating to the source code defects alleged at the evidentiary hearing would not be allowed in their individual trials or hearings if the Intoxilyzer 5000EN instrument reported a numerical value for measured breath alcohol.

3. The district court did not abuse its discretion when, in accordance with Minn. R. Evid. 104, it made a pretrial determination that Intoxilyzer 5000EN instruments that report a deficient breath sample while running the 75-0240 version of the source code are unreliable unless there is other evidence or observations that demonstrate the deficient sample was not the result of a source code error.

Affirmed.

O P I N I O N

ANDERSON, G. Barry, Justice.

This appeal involves a statewide challenge to the reliability of Intoxilyzer 5000EN test results based on alleged defects in the Intoxilyzer 5000EN source code.[1] The

[1] The source code is a human-readable representation of instructions that are performed by a computer. The source code for the Intoxilyzer 5000EN is over 1,113 pages of printed material. It is comprised of C code and Assembly code for the two microprocessors used in the Intoxilyzer 5000EN, the 8051 processor (referred to as the slave processor) and the Z80 processor (referred to as the master processor). When the code is compiled or assembled and linked, it is converted into a form that is executable by the microprocessors. The microprocessors execute the instructions contained in the

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Intoxilyzer 5000EN is a testing instrument manufactured by CMI, Inc. that uses infrared absorption spectroscopy to measure the breath alcohol concentration of subjects who provide breath samples, and test results from the Intoxilyzer are routinely admitted as evidence in civil implied consent and criminal driving while impaired (DWI) cases. Following the State's disclosure of the Intoxilyzer 5000EN source code, drivers across Minnesota began challenging the reliability of Intoxilyzer 5000EN test results based on alleged defects in the source code. We assigned a single district court to decide these challenges. After an evidentiary hearing, the district court ruled that: (1) Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable, (2) challenges to those instruments, which were premised on the source code defects alleged at the evidentiary hearing, were overruled and evidence relating to those challenges would not be allowed at the individual appellants' trials or hearings, and (3) Intoxilyzer 5000EN instruments that report a "deficient sample" while running the 75-0240 version of the source code ("240 software") are unreliable unless there is other evidence or observations that demonstrate the deficient sample was not the result of a source code error.[2] Because we conclude that the district court afforded appellants ample

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converted source code to perform the instrument functions. The master processor is responsible for the basic instrument operations like displaying readouts. The slave processor is primarily responsible for receiving the analog output or measurements and performs most of the calculation or data analysis. The aspects of software function performed by the slave processor are particularly relevant to these proceedings.

[2] A "deficient sample" is a reported test result for a breath sample that does not meet a minimum breath volume of 1.1 liters and/or level slope requirements within a 4-

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opportunity to present evidence challenging the reliability of Intoxilyzer 5000EN instruments and that the record and existing law support the district court's evidentiary rulings, we affirm.

History of source code proceedings

For many years, the reliability of Intoxilyzer 5000EN instruments went unchallenged, and existing rules and statutes provide that Intoxilyzer 5000EN test results are admissible into evidence without antecedent expert testimony.[3] *See* Minn. R. 7502.0425, subp. 1 (2011); Minn. Stat. § 634.16 (2010). In 2006, a driver, Dale Underdahl, filed a motion seeking discovery of the complete computer source code for the Intoxilyzer 5000EN instrument, arguing that access to the source code was necessary to determine whether the source code affected the reliability of the reported test result in his implied consent case. *Underdahl v. Comm'r of Pub. Safety*, Dakota County Court File No. 19-C1-06-6710. The Dakota County District Court issued an order granting Underdahl's discovery motion. The Commissioner of Public Safety ("Commissioner")

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minute time limit. The sample may also be deficient because it does not meet minimum flow rate of 0.17 liters, or sustained flow rate of 0.15 liters, provided over 2 seconds.

[3] Pursuant to Minn. R. 7502.0425, subp. 1 (2011), the Intoxilyzer 5000EN is an approved infrared breath-testing instrument in the State of Minnesota, and pursuant to Minn. Stat. § 634.16 (2010), the results of a breath test obtained through the use of an "approved" infrared breath-testing instrument are admissible into evidence without antecedent expert testimony establishing that the instrument provides a trustworthy and reliable measure of alcohol concentration. A party seeking to admit such evidence need only show that the breath test was performed by a person fully trained in the use of the instrument pursuant to training given or approved by the Commissioner of Public Safety. Minn. Stat. § 634.16.

petitioned the court of appeals for a writ of prohibition to prevent enforcement of the order granting Underdahl's discovery motion. The court of appeals denied the Commissioner's petition for a writ of prohibition. *In re Comm'r of Pub. Safety*, No. A06-1000, Order at 2-3 (Minn. App. filed July 18, 2006). Concluding that the Commissioner failed to establish a need for a writ of prohibition, we affirmed the court of appeals' denial of the Commissioner's petition.[4] *In re Comm'r of Pub. Safety*, 735 N.W.2d 706, 713 (Minn. 2007) (*Underdahl I*). The State subsequently disclosed the Intoxilyzer 5000EN source code to Underdahl. Following our decision in *Underdahl I*, requests for discovery of the source code became part of standard litigation strategy in criminal DWI and implied consent proceedings.[5]

In response to the many requests for discovery, the Commissioner filed a motion pursuant to Minn. R. Gen. Prac. 113.03, for assignment, to a single judge or a panel of judges, of all pending and future implied consent cases in which the petitioner challenged the reliability of Intoxilyzer 5000EN instruments based on allegedly defective source

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[4] Specifically, the Commissioner sought relief from the portion of the district court's order that required the Commissioner to "obtain and provide to [Petitioner's] counsel the complete computer source code for the operation of the Minnesota model of the Intoxilyzer 5000 currently in use in the State of Minnesota." *In re Comm'r of Pub. Safety*, 735 N.W.2d 706, 709 (Minn. 2007) (*Underdahl I*). In affirming the court of appeals' denial of the writ of prohibition, we held that the district court had jurisdiction to determine whether individual test results obtained from an Intoxilyzer 5000EN were reliable and accurate. *Id.* at 710-11.

[5] The requested discovery was granted in cases venued in at least 69 counties in the State. At least 66 counties had a request granted in an implied consent proceeding, and at least 65 counties had a request granted in a criminal proceeding. Furthermore, requests for discovery of the source code were granted in more than 4,200 cases across the State.

code. The Commissioner contended that assignment to a single judge would eliminate the risk of inconsistent rulings, provide a more efficient process and forum for adjudication of the source code challenges, and thereby preserve the resources of both the parties and the judiciary.[6] In addition, 18 municipal prosecuting authorities[7] moved for assignment, to a single judge or panel of judges, of all criminal DWI cases pending in their jurisdictions, together with the implied consent cases, that involved Intoxilyzer 5000EN source code challenges.[8]

We determined that assignment of the issue to a single judge would further the interests of the parties and the judiciary. Consequently, on January 11, 2010, we assigned First Judicial District Court Judge Jerome B. Abrams to "administer, hear, and decide all pretrial matters concerning challenges to the reliability of Intoxilyzer 5000EN results based on the source code of the instrument" in (1) all pending and future civil implied

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[6] Opposing counsel in all implied consent cases with source code challenges pending when the motion was filed were served with the motion. No party to an implied consent proceeding objected to the single assignment request.

[7] These municipalities include Apple Valley, Bloomington, Brooklyn Center, Corcoran, Golden Valley, Greenfield, Hassan, Hanover, Hopkins, Independence, Maple Grove, Maple Plain, Minneapolis, Minnetonka, Plymouth, Robbinsdale, and Rogers, and the Minnetonka Conservation District.

[8] Counsel for defendants in the pending criminal cases that were specifically identified in the municipal prosecuting authorities' motions were served with the motions, and none of the served attorneys responded to or opposed the motion. But the Chief Public Defender for the Seventh Judicial District filed a letter, on behalf of the State Public Defender, the Chief Public Defenders of all the judicial districts, and the Acting Chief Appellate Public Defender, opposing assignment to a single judge of criminal cases involving Intoxilyzer 5000EN source code challenges in which the defendant is represented by a public defender.

consent cases in which a party challenges the reliability of Intoxilyzer 5000EN results based on the source code of the instrument; and (2) all pending and future criminal DWI cases in which (a) a party challenges the reliability of Intoxilyzer 5000EN results based on the source code of the instrument and (b) both the prosecuting authority and the defendant provide written notice to Judge Abrams for their consent to this assignment.

The statewide assignment to the district court consists of three groups of identifiable cases. The first group consists of all pending and future implied consent matters in which the source code challenge is raised. The second group is all pending and future criminal DWI cases in which the source code issue is raised and "both the prosecuting authority and the defendant provide written notice to [the district court] of their consent to th[e] assignment." The third group includes all of the criminal DWI cases listed in an addendum to the January 11, 2010, assignment order so long as the defendant was not represented by a public defender. Since this assignment order was issued, no party has objected to it or to the implementation orders promulgated by the district court.

Appellants' motions

After several months of discovery, appellants[9] filed a pretrial motion to exclude all test results produced by the Intoxilyzer 5000EN instrument in their individual trials or hearings. Appellants argued that defects in the Intoxilyzer 5000EN source code affected

[9] "Appellants" refers to the civil implied consent petitioners and criminal DWI defendants who challenged the reliability of Intoxilyzer 5000EN test results based on alleged defects in the instrument's source code and who were part of the consolidated proceedings before the district court.

the reliability of both: (1) 5000EN instruments that reported a numerical value for measured breath alcohol, and (2) 5000EN instruments that reported a deficient breath sample. In the event the district court denied their motion to exclude the Intoxilyzer 5000EN test results, appellants alternatively moved for a pretrial order allowing them to present the trier of fact in their individual cases with expert testimony that the alleged defects in the source code affected the precision of the reported test results.

In response to appellants' pretrial motions, the district court held an evidentiary hearing beginning on December 8, 2010, and concluding on December 23, 2010. The district court stated that the proceedings were to provide a resolution of the "admissibility or inadmissibility of results reported by Minnesota's Intoxilyzer 5000EN fleet as a result of the Source Code of the instrument," and "whether challenges related to the reliability of Intoxilyzer 5000EN results based on the Source Code of the instrument should be permitted." Throughout the hearing, the district court reminded the parties that it was conducting an evidentiary hearing pursuant to Minn. R. Evid. 104, which provides that "[p]reliminary questions concerning . . . the admissibility of evidence shall be determined by the court . . . ."

At the evidentiary hearing, a report prepared by Computer Forensic Services, Inc. ("CFS"), was admitted into evidence. CFS was the company retained by appellants to analyze the source code of the Intoxilyzer 5000EN. After conducting a thorough analysis of the source code, CFS concluded that "the Intoxilyzer 5000EN instruments in use in

Minnesota provide[] valid BrAC[10] measurements and function[] as designed." In spite of the conclusion by *appellants'* primary expert that the Intoxilyzer 5000EN instrument provided *valid* breath alcohol measurements, appellants continued to challenge the reliability of the Intoxilyzer 5000EN instrument. Appellants presented testimony by other experts who opined that the source code of the Intoxilyzer 5000EN would be *more* reliable if it included self-testing and radio frequency interference (RFI) detection. Appellants' experts also questioned the reliability of Intoxilyzer 5000EN instruments that reported a "deficient sample" because a failsafe in the 240 software caused the instrument to label some adequate breath samples as a "deficient sample" depending on how hard the person blows into the Intoxilyzer 5000EN instrument. The three experts called by the State opined that the alleged defects in the source code's self-testing and RFI detection did not cause the Intoxilyzer 5000EN instrument to report inaccurate numerical values for measured breath alcohol and that the failsafe in the 240 software only caused an adequate breath sample to be labeled deficient when a person blows exorbitantly hard. Because the district court's evidentiary rulings in this proceeding depended in part on the district court's credibility assessments, a more detailed description of the testimony of each expert is appropriate.

Appellants' expert witnesses

Appellants' first expert witness was Timothy E. Black, who is a systems consultant with decades of experience with embedded computer systems. He designed

[10] BrAC refers to breath alcohol concentration.

and conducted several experiments to test how the Intoxilyzer 5000EN's source code affected breath alcohol test results in marginal and extreme breath-testing situations. Black traveled to Kentucky to view the source code on August 9, 2009. He spent 6.5 hours viewing the source code, including his time reviewing his notes and "planning what else to study." Black focused his examination and testing on what he identified as problem areas, including self-testing functions, RFI, and sample volume detection. He prepared two reports on his findings, and both were admitted as exhibits at the evidentiary hearing.

Black's testing led him to conclude that the source code for the Intoxilyzer 5000EN was deficient in all three areas. For example, Black found that the self-testing functions in the source code are very limited, even though the source code is supposed to determine whether the machine is functioning properly. Black testified that the source code does not detect when the peripheral electrical or heater connections are unplugged and does not measure the heater temperature. In addition, Black testified that although the phenomenon of "power drift" (a change in voltage) could create unstable readings, the source code does not provide any method for either detecting or reporting power drift. Black concluded that the omissions in the self-test functioning of the source code adversely affect the reliability of the machine's breath alcohol test results.

Black also testified that the source code's failure to detect RFI from cell phones renders Intoxilyzer 5000EN test results unreliable. He cited his tests that were based upon generating signals across a bandwidth from 0 to 1000MHz. He claimed that the RFI detection built into the Intoxilyzer 5000EN only reacted to business-band

frequencies in the 148-156 MHz range. Noting that cell phones operate in the 900 MHz range, Black concluded that cell phone RFI would not cause tests to discontinue because the alleged radio interference is not detectable by the source code, and as a consequence, the interference compromises test results.

Black also testified that when the Intoxilyzer 5000EN is running the 240 software, the puff counter gives incorrect, usually higher, readings of the number of puffs than actually provided. He also found that the total volume of air recorded is not always accurate.

Appellants' second expert witness was Dr. Karl Schubert. CFS hired Schubert as an independent contractor, and he was part of the expert team that reviewed and wrote the CFS source code report. Schubert testified that he reviewed the source code line-by-line as part of a comprehensive examination. At the time of the hearing, however, Schubert acknowledged that he was no longer testifying on behalf of CFS but was now retained directly by appellants to testify as an expert.

Schubert had two criticisms of the source code: (1) the range of acceptability set by the source code is too narrow; and (2) without reporting a margin of error,[11] Intoxilyzer 5000EN test results are not reliable. Regarding the first criticism, Schubert found that the range of acceptability set by the source code for the breath volume required for an accurate reading was too narrow. In other words, if a test subject's breath volume was outside the set range, the machine might report a "deficient sample" even in

[11] "Margin of precision" and "margin of error" were used throughout the proceeding. These two terms, at least for the purpose of this opinion, are synonymous.

instances in which a sample was not deficient. Schubert testified that, although there are many reasons for a sample to be labeled as deficient, the source code lacks a means to report why the sample is deficient. According to Schubert, the simple fix for this error is to increase the breath volume tolerance in the source code.

Schubert also testified about the precision of test results in relation to the Intoxilyzer 5000EN. Schubert testified that the source code does not comply with the requirement in the State's request for proposal (RFP) and CMI's response to the RFP that systematic error could not be greater than +/-3% or +/-0.003 alcohol concentration, whichever is larger. Schubert found that the source code is deficient because it does not provide measured breath alcohol concentration results with the precision the State required in its request for proposal. Instead, he concluded the machine was accurate within a 10% margin of error for a 0.08 alcohol concentration. In addition, he testified about a statistical analysis study conducted by Rod Gullberg that showed a 9-3/8% margin of error for a 0.08 alcohol concentration ("Gullberg Study"). *See* Rod G. Gullberg, *Breath Alcohol Measurement Variability Associated with Different Instrumentation and Protocols*, 131 Forensic Sci. Int'l 30 (2003). Schubert concluded that without reporting the margin of error, the Intoxilyzer 5000EN does not accurately, validly, and reliably report alcohol concentrations of 0.08 or 0.20 to a reasonable degree of engineering certainty.

Appellants' third expert witness was Mary Catherine McMurray. She is a self-employed forensic scientist who consults on breath alcohol concentration test cases. Before becoming an independent consultant, McMurray worked as a chemist for the

Wisconsin State Patrol in the breath alcohol program, where she was responsible for checking and certifying the Wisconsin's Intoxilyzer 5000s and training police officers, lawyers, and judges in machine operations.

McMurray testified that she had conducted her own testing during training seminars regarding the way in which radio frequency interference from cell phones affected Intoxilyzer test results. According to McMurray's testing, RFI from cell phones caused false positive breath alcohol concentration test results on subjects who were completely alcohol-free. In addition, McMurray testified that the source code does not correctly calculate breath volume, which could affect the reliability of test results.

Appellants' fourth expert was Karin Kierzek. She is a forensic scientist with the Bureau of Criminal Apprehension ("BCA"). Kierzek explained in more detail that there are five criteria that must be met for the Intoxilyzer to accept a breath sample. The criteria are: (1) start by blowing at 0.17 liters of air per second; (2) maintain a breath rate of at least 0.15 liters of air per second; (3) maintain that rate for at least two seconds; (4) blow a minimum volume of air of at least 1.1 liters; and (5) attain a fairly level alcohol slope that is rising at a rate of less than seven percent. Kierzek testified that if a person blows "very hard" into the instrument, the person would have to blow a "great deal longer" for the instrument to accept the sample.

Appellants' fifth expert witness was Patrick Pulju. His job is to maintain the Intoxilyzer 5000ENs and train officers to use the instrument. Pulju testified that an error in the current 240 software running the Intoxilyzer 5000EN caused some adequate breath samples to be falsely rejected as deficient. Specifically, Pulju testified that when a person

blows "very hard," the required volume is increased by two-thirds, meaning the person would need a minimum sample size of 1.8 liters for acceptance.

The State's expert witnesses

The State's first expert witness was Dr. Stephen Nuspl. Nuspl has an advanced degree in electrical engineering and substantial computer programming experience. Nuspl traveled to Kentucky to review the source code. He produced a report in which he detailed his own independent review as well as his review of each of the other expert reports.

Nuspl testified that omissions Black found in the source code with respect to self-testing were inconsequential because the machine is tended by an operator, who is supposed to observe if the machine is not functioning properly. He also testified that omissions in the source code for detecting radio frequency from cell phones were not a concern "if one uses a reasonable set of guidelines – like, for example, making sure that cell phones are not in the same room or at least a certain distance away."

The State's second expert witness was Matthew Willis. He was the vice president of security services at CFS.[12] Willis testified that appellants hired CFS to review the source code, and he employed Schubert to help him with that review. Willis testified that he disagreed with Schubert's conclusion that, due to source code errors and omissions, a 0.08 breath alcohol test result from the Intoxilyzer 5000EN was unreliable without reporting the margin of error attached to that result.

[12] Because of the unusual circumstances presented by the State calling an employee of appellants' primary expert (CFS), the district court limited the testimony of Willis.

The State's third expert witness was David Edin, who is a forensic scientist with the BCA. Edin's job responsibilities include teaching certification and recertification classes to Intoxilyzer 5000EN operators, instrument repair, and software evaluation. Edin testified about the issues raised in a series of emails beginning in 2006 between BCA breath-testing employees and CMI. Edin testified that the BCA was concerned about whether CMI had changed the sample acceptance criteria in the 240 software and, if so, whether it was possible the acceptance criteria were "denying people being able to provide tests."

Edin and others at the BCA conducted several tests, and decided that a sample might be erroneously labeled deficient only if a person was blowing "exorbitantly hard." Edin testified that the software change only affected sample acceptance, not any actual alcohol concentration measurement. He testified that when a test subject provides a deficient sample, he or she may be charged with a refusal at the discretion of the operator; the Intoxilyzer does not measure intent and it is up to the operator to discern why the deficient sample occurred. The operator could give further instruction on how to provide a sample and let the subject take another breath test or offer an alternate test. But if the operator believed that no amount of instruction would produce an accepted sample, based on the subject's conduct, the officer could charge the subject with refusal.

Edin also testified about his understanding of the Gullberg study. According to Edin, the Gullberg study concluded that more variables exist with biological variants than with control variants. Thus, when dealing with results generated by human subjects in

the field, the range of values will be wider than in a laboratory setting. Edin therefore concluded that the Intoxilyzer 5000EN is acceptable in its level of precision.

The district court's credibility assessments

After reviewing all the evidence, the district court found that the CFS report cast "a large shadow over the hearing" because appellants' primary expert determined that Intoxilyzer 5000EN instrument produced valid breath alcohol measurements and functioned as designed. The district court also found the State's experts to be qualified and knowledgeable. More specifically, the district court stated, "Dr. Nuspl's qualifications to address matters related to the Source Code of the Intoxilyzer 5000EN were well established." The district court further stated, "[f]rom [Dr. Nuspl's] testimony it was apparent that he conducted a very thorough review of the Source Code." The district court also emphasized that Nuspl made "repeated material references to the actual Code when making observations about the findings of others."

The district court criticized the methodology and documentation of several of appellants' experts. More specifically, the district court described Black's source code review as follows:

> The principal shortcoming in all of Mr. Black's criticisms of the 5000EN is the lack of documentation for the testing and experiments he conducted. Despite the occasional selective printout of tests from the instrument, he lacked a disciplined approach to the testing he conducted and to the construction of the apparatus which he used for some of his testing. Much of what he presented was anecdotal in nature, and even when he purported to record with a video camera what he was doing during his testing, the recording appeared to have many of the qualities of a home movie rather than the consequence of scientific testing. The test equipment and many of the results were understood by him to serve as foundation for his opinions. He elected not to bring much of this foundation to court.

> There were many questions arising from his testimony that were unresolved by lack of documented testing, lack of foundation, and overall lack of scientific methodology.

With regard to Schubert's testimony, the district court concluded that Schubert's reliance on the Gullberg article was misplaced:

> A close reading of the Gullberg Article, however, indicates a recognized and accepted scientific difference between testing performed by the National Highway Traffic Safety Administration ("NHTSA") using simulator standards and results obtained from human testing. [Gullberg Study]. Specifically, the Gullberg Article notes results from human testing will result in greater variability due to the presence of "the biological component," which is "the largest contributor to variability," and expressly seeks to avoid confusion between a comparison of its results and the NHTSA testing. The [appellants'] reliance upon a comparison between the conclusions reached in the Gullberg Article and the requirements set forth in the Request for Proposal is therefore misplaced.

The district court also expressed significant concerns regarding McMurray's credibility and qualifications as an expert witness:

> Ms. McMurray impressed the court with her position of distrust for the Intoxilyzer and outright antipathy towards CMI. Her bias was demonstrated, and in the Court's view, her qualifications to provide meaningful insight into the Source Code and its alleged problems were never established. In sum, early on Ms. McMurray claimed not to want a direct role in this case, due to her concerns that she may not be qualified to address the issues. Her initial concern was proven correct.

The district court also specifically found that McMurray's challenges based on alleged RFI interference did not affect the reliability of Intoxilyzer 5000EN test results:

> As Dr. Nuspl explained, cell phone transmission is typically 0.10 watt/meter in terms of energy. For there to be any possibility of RFI with 5000EN test results, a cell phone would have to be remarkably close to the instrument. . . . There were no specifics, findings, papers, documented complaints, etc. other than a faint anecdotal assertion by [McMurray].

The district court also concluded that McMurrary's challenges based on alleged errors in the calculation of volume did not affect the reliability of Intoxilyzer 5000EN results:

> Acceptance of a breath sample is achieved once a subject delivers a breath at a rate of 0.17 liters and sustains it at a rate of 0.15 liters until a minimum of 1.1 liters has been measured. . . . If all of the criteria as established by the Source Code are met in terms of minimum values of a supplied breath sample, the air volume reading being higher than the actual sample supplied does not cause the BrAC result to be unreliable—only the volume measurement number.

The district court's evidentiary rulings

Based on the evidence presented at the evidentiary hearing, the district court determined that Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable. The district court explained that the alleged source code defects relating to self-testing, volume measurements, margin of error, and RFI did not affect the reliability of Intoxilyzer 5000EN instruments that reported a numerical value for measured breath alcohol. More specifically, the district court stated:

> [The] self-test is unnecessary for the reason explained: [t]he operator checks the tube, which has the secondary consequence of confirming that the RFI antenna is plugged in. There is no need for an electronic self-test when an actual physical verification is an integral part of the instrument operation. . . .
> . . . .
> Most sources of RFI are neither as close nor as strong as the testing device created by Mr. Black. As Dr. Nuspl explained, cell phone transmission is typically 0.10 watt/meter in terms of energy. For there to be any possibility of RFI with 5000EN test results, a cell phone would have to be remarkably close to the instrument.

The district court also concluded that

> [regarding "power" drift,] there was equally no evidence or data which indicated how [the omission of a self-test for precision in voltage] had an impact on the reliability of the result. The conclusion was a simple

> proposition: The older the machine, the more problems that result. In [Black's] view – again, without any supporting data or testing – subtle changes take place over time, leading to an inflation of all test results, even though the results themselves look valid.

Regarding air volume measurements, the district court stated:

> If all of the criteria established by the Source Code are met in terms of minimum values of a supplied breath sample, the air volume reading being higher than the actual sample supplied does not cause the BrAC result to be unreliable—only the volume measurement number. . . . The testimony at trial did explain that regardless of the error in the overall volume reading, the Source Code instructions directing that a test be conducted on an appropriate sample, together with all other requirements being met, will produce a reliable test so long as the minimum requirements are met.

Finally, with respect to margin of error, the district court stated:

> Deciding whether it would be appropriate to require reporting of a standard deviation and confidence interval with every breath alcohol concentration test result goes far beyond the scope of the issue before this Court and into policy decision making.
>
> The Minnesota Court of Appeals has repeatedly held that breath alcohol concentration results need not be reported with a margin of error. . . . [A]n inquiry into the margin of error created by the measurement process does not involve the Source Code issue before this Court and is beyond the scope of these proceedings.

Consequently, the district court denied appellants' motion to exclude test results produced by Intoxilyzer 5000EN instruments that reported a numerical value for measured breath alcohol.

The district court also denied appellants' alternative motion for an order allowing them to present to the trier of fact in their individual cases expert testimony that the alleged defects in the Intoxilyzer 5000EN source code affected the precision of the instrument's test results. The district court explained that "[t]o the extent challenges to

test results are premised upon problems with the Source Code, such challenges are overruled, and evidence of the same should not be allowed."

The district court determined, however, that the source code of the instrument did impact the reliability of Intoxilyzer 5000EN instruments that reported a "deficient sample" while running the 240 software because the "deficient sample . . . could be due to either a software failsafe or the conduct of the test subject." Consequently, the district court ruled that in those cases, Intoxilyzer 5000EN deficient sample test results were inadmissible unless there was other evidence or observations that supported the sample being deficient.

Appellate court proceedings

Appellants filed a petition for discretionary review with the court of appeals, which granted the petition. We later granted the State and Commissioner of Public Safety's request for accelerated review.

On appeal, appellants assert three claims: (1) the district court's order must be reversed because the district court failed to articulate and apply the appropriate standard to determine the admissibility of Intoxilyzer 5000EN test results; (2) the district court violated their right to due process when it ruled that appellants cannot present evidence to the fact finders in each case that the Intoxilyzer 5000EN test results may be affected by source code errors; and (3) the district court erred in ruling that evidence of an unreliable and inadmissible "deficient sample" test report is admissible if other evidence supports the deficient sample report. For the reasons discussed below, we conclude that the district court afforded appellants ample opportunity to present evidence challenging the

reliability of Intoxilyzer 5000EN test results and that the district court's evidentiary rulings are supported by the record and existing law.

I.

We first address appellants' claim that the district court committed reversible error by not articulating any particular standard when it ruled Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable and unaffected by actual or alleged problems with the instrument's source code.

Rulings on evidentiary matters rest within the sound discretion of the district court and will not be reversed on appeal absent a clear abuse of discretion. *State v. Willis*, 559 N.W.2d 693, 698 (Minn. 1997). The clearly erroneous standard controls our review of a district court's factual findings. *State v. Prtine*, 784 N.W.2d 303, 312 (Minn. 2010). We will not reverse an evidentiary ruling based on a district court's failure to make a detailed record of its analysis if our review of the record supports the evidentiary ruling. *See, e.g.*, *State v. Swanson*, 707 N.W.2d 645, 655 (Minn. 2006) (affirming the admission of impeachment evidence when our review of the record revealed that only one *Jones* factor weighed against the admission of Swanson's prior assault conviction).

The district court did not expressly articulate the standard it applied when it made its evidentiary ruling that Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable and unaffected by actual or alleged problems with the instrument's source code. We therefore consider whether, in light of the relevant law, the record supports the district court's evidentiary ruling.

Pursuant to Minn. R. Evid. 104(a), a district court is allowed to determine "[p]reliminary questions concerning . . . the admissibility of evidence." To the extent that the admissibility of evidence is conditioned on a threshold question of fact, it is the function of the district court to determine whether or not the condition has been fulfilled. Minn. R. Evid. 104(a) comm. cmt.—1977.

Both parties contend that a preliminary question regarding the admissibility of Intoxilyzer 5000EN test results that report a numerical value for measured breath alcohol is whether the Intoxilyzer 5000EN instrument was reliable and unaffected by actual or alleged problems with the instrument's source code.[13] In support of that contention, the parties rely on a three-part burden-shifting test established by the court of appeals. Under that test, the Commissioner in an implied consent case or the prosecutor in a DWI prosecution must establish a prima facie case that "the test is reliable and 'that its administration in the particular instance conformed to the procedure necessary to ensure reliability.' "[14] *Kramer v. Comm'r of Pub. Safety*, 706 N.W.2d 231, 235 (Minn. App.

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[13] The district court expressly stated that the *Frye-Mack* standard did not apply in this case. *See Goeb v. Tharaldson*, 615 N.W.2d 800, 809-10 (Minn. 2000) (articulating the *Frye-Mack* standard). On appeal, the parties do not argue that the *Frye-Mack* standard applies.

[14] This consolidated proceeding, which involves thousands of cases, is not well suited for consideration of the second factor listed in the first part of the three-part burden-shifting test: whether in a particular instance the operator administered the breath test in conformity with the procedures required to ensure reliability. Moreover, the district court did not make a pretrial determination that the administration of the test in each of appellants' individual cases conformed to the procedure necessary to ensure reliability. Thus, our analysis is limited to the narrow issue of whether the district court abused its discretion when it determined that the Intoxilyzer 5000EN instrument "is

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2005) (quoting *State v. Dille*, 258 N.W.2d 565, 567 (Minn. 1977)). If the government establishes a prima facie case, the driver/defendant must then come forward with evidence of a defect that affects the validity and trustworthiness of the breath test. *Falaas v. Comm'r of Pub. Safety*, 388 N.W.2d 40, 42 (Minn. App. 1986). If a defendant establishes a relationship between the alleged defect and the validity of the test result, the government must demonstrate that the defect did not affect the reliability of the test. *Noren v. Comm'r of Pub. Safety*, 363 N.W.2d 315, 318 (Minn. App. 1985). Assuming without deciding that the parties' contentions are correct, we are faced with the issue of what standard of proof is required to satisfy the third part of the court of appeals' three-part burden-shifting test because we have never articulated the standard of proof required to establish a preliminary condition of admissibility in accordance with Minn. R. Evid. 104.

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reliable" when it reports a numerical value for measured breath alcohol. Several of the cases cited by the parties are factually distinguishable from this case because the cases involve the question of whether, in a particular instance, the operator administered the breath test in conformity with the procedures required to ensure reliability. *See Bond v. Comm'r of Pub. Safety*, 570 N.W.2d 804, 806 (Minn. App. 1997) (deciding whether the Intoxilyzer test was invalid and unreliable because the Commissioner did not show that the standard simulator solution used in the Intoxilyzer instrument had been changed in a timely manner); *Tate v. Comm'r of Pub. Safety*, 356 N.W.2d 766, 767-68 (Minn. App. 1984) (concluding that the district court properly admitted breathalyzer-test-result evidence even though the officer administering the test admitted that his observation of the appellant was interrupted); *Bielejeski v. Comm'r of Pub. Safety*, 351 N.W.2d 664, 666 (Minn. App. 1984) (concluding that appellant's "grounds for appeal, that he might have burped, that he might have had a fever, that the simulator solution might have been low, that the machine might not have been warmed up, are merely an invitation to speculation and contrary to the evidence"). In all of these cases, the establishment of and challenges to the prima facie cases involved facts specific to the individual administration of the test, not the general reliability of the instrument itself.

The United States Supreme Court and at least one legal commentator have concluded that a district court should use a preponderance of the evidence standard when determining whether or not a preliminary condition of admissibility has been fulfilled. *Bourjaily v. United States*, 483 U.S. 171, 175 (1987); 11 Peter N. Thompson, *Minnesota Practice—Evidence* § 104.2 (3d ed. 2001); *see also* 11A Peter N. Thompson & David F. Herr, *Minnesota Practice—Courtroom Handbook of Minnesota Evidence*, at 20 (2012 ed.) (stating that "[t]he judge should use a preponderance of the evidence standard" under Rule 104(a)). The preponderance of the evidence standard requires that to establish a fact, "it must be more probable that the fact exists than that the contrary exists." *City of Lake Elmo v. Metro. Council*, 685 N.W.2d 1, 4 (Minn. 2004) (citing *Netzer v. N. Pac. Ry. Co.*, 238 Minn. 416, 425, 57 N.W.2d 247, 253 (1953)). "If evidence of a fact or issue is equally balanced, then that fact or issue has not been established by a preponderance of the evidence." *Id.* In *Bourjaily*, the United States Supreme Court, interpreting Fed. R. Evid. 104, said:

> We have traditionally required that these matters [of preliminary admissibility] be established by a preponderance of proof. . . . The preponderance standard ensures that before admitting evidence, the court will have found it more likely than not that the technical issues and policy concerns addressed by the Federal Rules of Evidence have been afforded due consideration.

483 U.S. at 175. We are persuaded by the Court's reasoning in *Bourjaily* in part because the language in Minn. R. Evid. 104 is identical to Fed. R. Evid. 104. Consequently, we hold that the preponderance of the evidence standard applies to preliminary questions concerning the admissibility of evidence.

As mentioned above, the district court did not explicitly articulate the standard of proof it was applying. Our review of the record, however, indicates that the district court plainly applied the preponderance of the evidence standard when it made its pretrial determination that Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable and unaffected by the source code defects alleged at the evidentiary hearing. The district court's detailed findings regarding the testimony of each expert demonstrate that the district court did not find the parties' evidence to be "equally balanced." Instead, the district court expressly found the State's experts to be more credible, explaining for example that "[o]n the subject of RFI, with demonstrated knowledge of electromagnetic theory and science, Nuspl undid much of the criticisms of Mr. Black." The district court also found that the CFS report had effectively eclipsed appellants' other evidence because CFS, which was appellants' principal expert, concluded that the "Intoxilyzer 5000EN instruments in use in Minnesota provide[] valid BrAC measurements and function[] as designed." The district court specifically declared that the CFS report cast "a large shadow over the hearing." Based on this record, we conclude that a preponderance of the evidence supports the district court's pretrial determination that Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol are reliable and unaffected by the source code errors alleged at the evidentiary hearing.[15] We therefore hold that the district court did not abuse its

[15] We need not decide whether the parties have properly asserted that the court of appeals' three-part burden-shifting test applies in this case because, even if we assume

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discretion when it denied appellants' pretrial motion to exclude test results produced by Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol.

II.

We next address appellants' challenge to the district court's ruling that "[t]o the extent challenges to test results are premised upon problems with the Source Code, such challenges are overruled, and evidence of the same should not be allowed." Appellants claim the ruling violates their due process and fair trial rights because "the only issue before [the district court] was whether Intoxilyzer results were admissible at all, not whether any evidence challenging individual results was admissible." Appellants also claim that they "proved conclusively that certain Intoxilyzer 5000EN breath alcohol test results may be affected by source code error." Because neither of appellants' claims are supported by the record and the district court provided appellants with ample process, we conclude that the district court did not violate appellants' due process and fair trial rights when it made its pretrial determination that evidence relating to source code challenges to the reliability of Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol would not be allowed in appellants' individual trials or hearings.

"Under the due process clauses of the Fourteenth Amendment of the United States Constitution and Article I, Section 7 of the Minnesota Constitution, every criminal

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the test applies, the government has satisfied the third part of the test by a preponderance of the evidence.

defendant has the right to be treated with fundamental fairness and afforded a meaningful opportunity to present a complete defense."[16] *State v. Quick*, 659 N.W.2d 701, 712-13 (Minn. 2003) (citation omitted) (internal quotation marks omitted). "The United States Supreme Court has recognized that the right to present a defense encompasses the right to offer the testimony of witnesses so that the defense can present its version of the facts to the jury as well as the state so that the jury can decide where the truth lies." *Id*. at 713. But the evidence proffered in support of the defense must still comply with the rules of evidence. *State v. Svoboda*, 331 N.W.2d 772, 775 (Minn. 1983).

The question of whether a testing instrument is reliable is separate and distinct from the question of how much weight a trier of fact should give to the test results. *See* Minn. R. Evid. 104(e) (providing that Rule 104 does not limit the right of a party to introduce before a jury evidence relating to weight or credibility); *State v. McCabe*, 251 Minn. 212, 216, 87 N.W.2d 360, 363 (1957) (explaining that "[i]t is generally recognized that the weight and credibility of expert testimony is for the jury's determination"). Nevertheless, a district court may prevent a defendant from presenting expert testimony to the trier of fact without violating the defendant's constitutional rights when, for example, the court concludes that the evidence is not relevant. *McCabe*, 251 Minn. at

[16] Likewise, because a driver's license is an important property interest, drivers in implied consent cases have the right to procedural due process before the state can revoke their licenses. *Bell v. Burson*, 402 U.S. 535, 539 (1971). "The fundamental requirement of due process is the opportunity to be heard at a meaningful time and in a meaningful manner." *Heddan v. Dirkswager*, 336 N.W.2d 54, 59 (Minn. 1983) (citation omitted) (internal quotation marks omitted). Procedural due process "is flexible and calls for such procedural protections as the particular situation demands." *Morrissey v. Brewer*, 408 U.S. 471, 481 (1972).

216-17, 87 N.W.2d at 363*; see also* Minn. R. Evid. 401 (" 'Relevant evidence' means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence").

In our January 11, 2010, order, we assigned the district court to "administer, hear, and decide all pretrial matters concerning challenges to the reliability of Intoxilyzer 5000EN results based on the source code of the instrument" in (1) all pending and future civil implied cases in which a party challenges the reliability of Intoxilyzer 5000EN results based on the source code of the instrument; and (2) all pending and future criminal DWI cases in which (a) a party challenges the reliability of Intoxilyzer 5000EN results based on the source code of the instrument and (b) both the prosecuting authority and the defendant provide written notice to Judge Abrams for their consent to this assignment. Consistent with our order, appellants filed motions seeking pretrial rulings on two distinct issues. The first was whether Intoxilyzer 5000EN test results were inadmissible based on a lack of instrument reliability caused by alleged source code errors. The second was whether appellants could present the trier of fact in each individual case with expert testimony that the alleged defects in the source code affected the precision of the test results.

During the consolidated proceedings, appellants had ample opportunity to challenge the reliability of Intoxilyzer 5000EN test results. The district court heard the testimony of each of the parties' witnesses, admitted into evidence expert reports from both parties, and received and considered hundreds of pages of documents. After

considering all of the evidence, the district court concluded that "[t]he results of breath alcohol testing conducted on the Intoxilyzer 5000EN which express a numerical value for measured breath alcohol are reliable and unaffected by actual or alleged problems with the Source Code of the instrument." The district court then considered the second issue raised in appellants' pretrial motions: whether appellants could present the trier of fact in each individual case with expert testimony that the alleged defects in the source code affected the precision of the test results. Having concluded that the validity of the test results in question were *unaffected* by the alleged source code defects, the district court ruled that appellants would not be allowed to present evidence to the trier of fact in each individual case relating to source code challenges to Intoxilyzer 5000EN instruments that reported a numerical value for measured breath alcohol.

Despite appellants' claims to the contrary, the record plainly demonstrates: (1) that the question of whether evidence relating to source code challenges to Intoxilyzer 5000EN could be admitted at appellants' individual trials was squarely before the district court, and (2) that the validity of test results produced by Intoxilyzer 5000EN instruments that report a numerical value for measured breath alcohol were unaffected by the source code defects alleged at the evidentiary hearing, a fact conceded in the report from appellant's primary expert, CFS. Because the district court extended ample process to appellants and the source code defects alleged at the evidentiary hearing are not relevant to the issue of whether the test results in question are valid, we conclude that the district court did not violate appellants' right to due process and a fair trial when it ruled that

"[t]o the extent challenges to test results are premised upon problems with the Source Code, such challenges are overruled, and evidence of the same should not be allowed."[17]

We emphasize that the district court limited its decision to "challenges of breath alcohol test results based upon the Source Code of the Intoxilyzer 5000EN" and did not "intend[] to impair other defenses or challenges as may be permitted." In other words, any challenges that are not based on the source code of the Intoxilyzer 5000EN are not excluded from individual trials or hearings. Examples of non-source code challenges that can still be presented at individual trials and hearings include, but are not limited to, problems with the simulator solution and an operator's lack of adherence to testing protocols.[18]

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[17] A determination that a scientific testing procedure is valid today is not a decision that is fixed in amber for all time. To the contrary, the district court correctly stated that it would "consider new challenges" to the source code "upon a showing of newly discovered evidence or that a substantial new analysis has been performed which supports position(s) not previously asserted." But to allow future challenges to the source code for the Intoxilyzer 5000EN based on new developments in the field or previously unknown deficiencies does not mean that appellants are entitled to again litigate in an individual proceeding the issues decided in this consolidated proceeding.

[18] The dissent acknowledges that our opinion permits "a defendant to mount a pretrial challenge to the procedures the police officer used while administering the test—for example, if the police officer failed to ensure a cell phone was sufficiently far from the testing device." Nevertheless, the dissent reads our opinion as prohibiting a defendant "from asking questions that relate to the *reason* such precautions are taken." We disagree with the dissent's reading of our opinion. The *reason* for the cell phone precautions is that *RFI from cell phones* can affect Intoxilyzer 5000EN test results. Nothing in our opinion prohibits expert testimony regarding the effects of RFI on Intoxilyzer 5000EN test results. Instead, our opinion affirms the district court's exclusion of expert testimony that the source code fails to detect cell phone RFI because, as appellants' primary expert CFS concedes, "the Intoxilyzer 5000EN instruments in use in

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III.

Finally, we address appellants' claim that the district court erred in ruling that "[e]vidence in such cases of a 'Deficient Sample' test report should not be allowed unless other evidence exists which provides reasons and/or observations of testing which supports the sample being deficient." Appellants argue that the district court's decision to allow evidence of a deficient sample was an abuse of discretion because evidence that is inadmissible because it is without foundational reliability does not become reliable and therefore admissible simply because other evidence also supports the same result.

When a breath test is offered as the evidentiary test, "the test must consist of analyses in the following sequence: one adequate breath-sample analysis, one control analysis, and a second, adequate breath-sample analysis." Minn. Stat. § 169A.51, subd. 5(a) (2010). "[A] sample is adequate if the instrument analyzes the sample and does not indicate the sample is deficient." Minn. Stat. § 169A.51, subd. 5(b) (2010). In order for a sample to be adequate, the person must (1) start blowing at 0.17 liters per second, (2) maintain a breath rate of at least 0.15 liters per second, (3) maintain that rate for at least two seconds, (4) blow a minimum volume of air of at least 1.1 liters, and (5) attain a fairly level slope that is rising at a rate of less than seven percent. Under Minn. Stat. § 169A.51, subd. 5(c) (2010), "failure of a person to provide two separate, adequate breath samples in the proper sequence constitutes a refusal."

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Minnesota provide[] valid BrAC measurements and function[] as designed." Thus, our opinion does not unfairly limit appellants' right to present a defense.

As discussed above, Minn. R. Evid. 104(b)[19] provides that "[w]hen the relevancy of evidence depends upon the fulfillment of a condition of fact, the court shall admit it upon, or in the court's discretion subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition." "Relevant evidence" is defined by Minn. R. Evid. 401 as "evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." If the preliminary question turns, "not on the application of an exclusionary rule of evidence, but on principles of relevancy, the judge . . . decides whether there is evidence in the record to create a jury question on the issue." 11 Peter N. Thompson, *Minnesota Practice—Evidence* § 104.02 (3rd ed. 2001).

The district court determined that version 240 software "does reject under some circumstances samples which are valid." But the court also found that the Intoxilyzer 5000EN instrument "does not detect intent" and that "a deficient sample . . . could be due to either a software failsafe or the conduct of the test subject." In accordance with Minn. R. Evid. 104, the district court made a pretrial determination that an Intoxilyzer 5000EN instrument that reports a "deficient sample" while running the 240 software was

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[19] Rule 104(a) must be read consistently with Rules 104(b) and (c). Pursuant to rules 401-403, the court must make a determination as to the relevance and admissibility of an offer of evidence. If the relevance of the offer is dependent on the existence of a second fact, the court's function is to determine whether there is sufficient evidence admitted for a jury decision as to the existence of the second fact. It is for the jury to decide whether or not the second fact is established and the weight to be given the original offer.

Minn. R. Evid. 104(b), comm. cmt.—1977.

unreliable and inadmissible unless there was additional evidence or observations that demonstrated that the reported "deficient sample" was not the result of the software failsafe. In other words, when the State establishes that the "deficient sample" is not due to the 240 software failsafe by presenting additional evidence, such as an officer's observation that the driver did not engage in exorbitantly hard blowing or other conduct that would cause the 240 software to report an adequate breath sample as a deficient sample, the reliability of an Intoxilyzer 5000EN instrument that reports a "deficient sample" is not called into question. Because the district court's ruling is well reasoned and consistent with existing law, we conclude that the district court did not abuse its discretion when, in accordance with Minn. R. Evid. 104, it made a pretrial determination that Intoxilyzer 5000EN instruments that report a deficient breath sample while running the 240 software are unreliable unless there is other evidence or observations that demonstrate the deficient sample was not the result of a source code error.[20]

[20] The dissent recharacterizes the district court's pretrial order as determining that "a deficient sample *is reliable* if 'there is other evidence or observations that demonstrate the deficient sample was not the result of a source code error.' " (Emphasis added). Relying on this recharacterization, the dissent asserts that appellants have been denied their right to present a defense because the district court's pretrial order prohibits them from presenting expert testimony that challenges the reliability of test results based on the source-code defects that were rejected by the district court. We disagree with the dissent's recharacterization and its assertion. The district court *accepted* appellants' challenge to the reliability of deficient sample results that were based on the 240 software failsafe and ruled that such results were *unreliable*, unless there is other evidence or observations that demonstrate the deficient sample was not the result of a source code error. If the State presents evidence that the driver did not engage in conduct that would cause the 240 software to report an adequate breath sample as inadequate, nothing in our opinion or the district court's pretrial order prevents the driver from presenting evidence

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The stay imposed by our Order of July 26, 2011, is dissolved effective upon either (1) the expiration of the time for filing a petition for rehearing, *see* Minn. R. Civ. App. Pro. 140.01, or (2) if a petition for rehearing is timely filed, a ruling by this court on the petition for rehearing, unless otherwise ordered.

Affirmed.

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of contrary facts and expert testimony regarding the 240 software failsafe. Thus, the district court's pretrial order does not unfairly limit appellants' right to present a defense.

D I S S E N T

PAGE, Justice (dissenting).

I respectfully dissent. The court holds that the district court did not abuse its discretion when it denied appellants' motion to exclude all test results produced by the Intoxilyzer 5000EN because: (1) the government established that the test results are reliable; (2) the district court did not violate appellants' due process and fair trial rights when it held that appellants could not introduce evidence at trial regarding the alleged source code defects if the Intoxilyzer 5000EN reported a numerical value; and (3) the district court did not abuse its discretion when it held that Intoxilyzer 5000EN results are unreliable if they report a deficient breath sample, unless there is evidence the deficient sample is not the result of a source code error. I dissent from the court's second and third holdings because there will be cases in which the source code will be probative of whether the Intoxilyzer 5000EN produced an accurate numeric result or accurately reported a deficient sample. Moreover, I have concerns regarding the practical effect of these rulings to the extent they essentially eviscerate the opportunity for an accused to challenge the weight or credibility of Intoxilyzer 5000EN results.

" 'Relevant evidence' means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." Minn. R. Evid. 401. Generally, "relevant evidence is admissible." Minn. R. Evid. 402. The court concludes that the district court did not violate appellants' due process and fair trial rights when it excluded evidence at trial related to alleged problems with the source code because "the source

code defects alleged at the evidentiary hearing are not relevant." *Supra* at 29. I disagree. It is undisputed that radio frequency from cell phones can affect the Intoxilyzer 5000EN's results.[1] The State's expert, Dr. Steven Nuspl, testified that cell phone frequencies are not a problem "if one uses a reasonable set of guidelines—like, for example, making sure that cell phones are not in the same room or at least a certain distance away." The district court concluded, "[f]or there to be any possibility of [radio frequency interference] with 5000EN test results, a cell would have to be remarkably close to the instrument." Implicitly, then, if proper precautions are not taken, the results will be inaccurate.

I read the court's opinion as permitting a defendant to mount a pretrial challenge to the procedures the police officer used while administering the test—for example, if the police officer failed to ensure a cell phone was sufficiently far from the testing device.[2] In order for the defendant to ascertain whether proper cell phone guidelines were followed, he could presumably cross-examine the police officer who administered the

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[1] The source code does not allow a test to be completed if the threshold level of radio frequency interference is detected, but the instrument itself does not confirm whether the radio frequency interference antenna is plugged in.

[2] Although the court does not directly address this issue, the court of appeals' three-part burden-shifting test takes into account whether a particular operator followed specified procedures. *See Noren v. Comm'r of Pub. Safety*, 363 N.W.2d 315, 317 (Minn. App. 1985) ("The proponent of a chemical test must establish that the test is reliable and 'that its administration in the particular instance conformed to the procedure necessary to ensure reliability.' " (quoting *State v. Dille*, 258 N.W.2d 565, 567 (Minn. 1977))). If a defendant advances an argument that the administration of the test did not conform "to the procedure necessary to ensure reliability," it appears such a challenge would occur at the pretrial stage because the argument would be based on a failure to follow procedures, not a source code error.

Intoxilyzer 5000EN test. But that cross-examination would be ineffective if the defendant was prohibited from asking questions that relate to the *reason* such precautions are taken. In other words, the cross-examination of the police officer regarding the procedures she followed would not aid the court in determining whether to admit the Intoxilyzer 5000EN results if the defendant cannot ask questions about the reasons for the guidelines.

Second, I disagree with the court's holding regarding the admissibility of a deficient breath sample. The court frames this as an evidentiary determination governed by Minn. R. Evid. 104(b).[3] According to the court, a deficient breath sample is reliable if "there is other evidence or observations that demonstrate the deficient sample was not the result of a source code error." *Supra* at 33. This "other evidence or observations" includes "an officer's observation that the driver did not engage in exorbitantly hard blowing or other conduct that would cause the 240 software to report an adequate breath sample as a deficient sample." *Id.* But the court's holding does not permit a defendant to rebut the officer's observations with evidence that the source code could have caused the deficient sample. Instead, unless there is a recording of the exchange, a defendant is limited to a credibility contest in which the defendant's word is the sole evidence available to oppose the police officer's testimony. *See Stephan v. State*, 711 P.2d 1156, 1159 n.6 (Alaska 1985) (cited in *State v. Scales*, 518 N.W.2d 587, 591 (Minn. 1994))

[3] "When the relevancy of evidence depends upon the fulfillment of a condition of fact, the court shall admit it upon, or in the court's discretion subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition." Minn. R. Evid. 104(b).

(noting that "it is probably generally valid" that courts are more likely to trust the recollections of police officers than the recollections of criminal defendants). In other words, the State is permitted to introduce evidence to establish that the source code was not at fault based purely on a police officer's observations, but the defendant is unable to produce evidence to establish that the source code *was* at fault based on the operation of the source code.

The practical result of the court's holdings is that defendants will be unable to challenge Intoxilyzer 5000EN results. Despite evidence that the test has a margin of error, that radio frequencies from cell phones can disturb the accuracy of the test, and that the test may erroneously produce a deficient sample,[4] a defendant may not raise the source code as a potential cause of an inaccurate or deficient sample. Denying the accused an opportunity to raise source code issues effectively eliminates the accused's opportunity to challenge the results.

ANDERSON, PAUL H. (dissenting).

I join in the dissent of Justice Page.

MEYER, J. (dissenting).

I join in the dissent of Justice Page.

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[4] The effect of a deficient sample might be license revocation. Under Minn. Stat. § 169A.52, subd. 3(a) (2010), the commissioner of public safety shall revoke a person's license if "the peace officer [certifies] that there existed probable cause to believe the person had been driving, operating, or in physical control of a motor vehicle in violation of section 169A.20 (driving while impaired), and that the person refused to submit to a test." The minimum revocation period "for a person with no qualified impaired driving incidents within the past ten years" is one year. *Id.*, subd. 3(a)(1).