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**In the Supreme Court of New Jersey**

*Docket Number 58,879*

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**STATE OF NEW JERSEY,  
Plaintiff-Petitioner,**

**v.**

**JANE H. CHUN, *et al.*,  
Defendants-Respondents.**

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**Defendant's Initial Brief**

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TO: Honorable Justices of the Supreme Court of New Jersey  
In care of Stephen W. Townsend, Clerk  
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## MATTER INVOLVED

On certification assumed *sua sponte* by the New Jersey Supreme Court, pursuant to its Order issued December 14, 2005,<sup>1</sup> the Hon. Michael Patrick King, J.A.D. (retired on recall), served as Special Master to conduct hearings on "the reliability of Alcotest breath test instruments...." The Court entered a subsequent Order<sup>2</sup> on January 10, 2006, addressing municipal court proceedings. The defense moved for reconsideration.<sup>3</sup> This Court denied the motion.<sup>4</sup>

After hearings between September 18, 2006, and January 10, 2007, Judge King issued his report on February 14, 2007, which partially sets forth the procedural history of this matter,<sup>5</sup> with the following clarifications and highlights.

When this Court (a) "ordered the stay of prosecutions and appeals involving repeat offenders and the execution of their sentences where the convictions were based solely on Alcotest readings,"<sup>6</sup> (b) ordered "that first-offender prosecutions proceed to trial based on clinical evidence when available and on Alcotest readings,"<sup>7</sup> and (c) stayed "the execution of sentences for all first offenders...pending disposition of the Court's final decision on the Alcotest 7110's reliability,"<sup>8</sup> this Court

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<sup>1</sup> Da1-4.

<sup>2</sup> Da5-8.

<sup>3</sup> Da9-14.

<sup>4</sup> Da15-16.

<sup>5</sup> SMR4-14.

<sup>6</sup> SMR8.

<sup>7</sup> SMR8.

<sup>8</sup> SMR8.

caused significant due process, speedy trial, and docketing issues for defendants and municipal courts by creating an enormous backlog of cases still pending final disposition. How this backlog resolves remains to be seen.

## AGREEMENT WITH THE SPECIAL MASTER

The defense implores this Court to adopt most of the findings of the Special Master, the Hon. Michael Patrick King, J.A.D. (retired on recall), concerning the Alcotest 7110 MK-III-C ["7110"] -- *i.e.*, that the instrument is acceptable for evidential breath tests in New Jersey (a) when accompanied by appropriate foundational proofs,<sup>9</sup> (b) when the test protocol is carefully followed by the operator and the instrument is functioning properly, and (c) the Special Master's recommendations are followed and ***implemented with his suggestions***.<sup>10</sup> Specifically:

### 1. In the Wake of Downie.

**Borderline Results.** The fact finder should pay close attention to the clinical findings and observations of the suspect at the time of apprehension, because a possible, but improbable, overestimated .08 breath reading regarding blood level may conceivably obscure and mislead a judge to an erroneous conclusion where the clinical data in the field sobriety test (FST) might otherwise strongly suggest innocence. Given the lack of absolute scientific certainty of breath-testing, we urge caution by the trial judge at the critical levels, .04, .08 or .10, when interpreting a close reading in the context of otherwise persuasive exculpatory clinical evidence.<sup>11</sup>

**Considering All Evidence.** A conviction based solely on a breath alcohol or blood alcohol reading in excess of the stated standard is a miscarriage of justice. It places over-emphasis on a single piece of evidence. The whole traditional evidential picture should be presented, *i.e.*, evidence of inadequate

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<sup>9</sup> SMR230. The Special Master's Report is cited herein as "SMR" followed by the page. This reference is to the Special Master's Report at page 230.

<sup>10</sup> SMR252-53.

<sup>11</sup> SMR226-27.

driving, evidence of impairment of the driver (physical coordination tests), physical indicia of alcohol consumption and then a properly conducted breath alcohol analysis (even with a converted blood alcohol reading). In that way neither conviction (nor exoneration) will depend on just one item of computerized evidence. Too much emphasis is placed on the test instead of on the person and the performance. That opinion is more strongly held as the penalties for drunk driving become increasingly harsh.<sup>12</sup>

## **2. Administrative Safeguards.**

**Strict Adherence to Test Protocols.** The operator must strictly follow the test protocol and the instructions or "prompts" on the LED screen during the testing process.<sup>13</sup> If the test protocol or instructions are violated in any respect, the blood alcohol content reading must be rejected as evidence.<sup>14</sup>

**Multi-Step Testing Protocol.** The multiple-step testing protocol must be meticulously followed before the test result is admitted in evidence.<sup>15</sup>

**Truncate Final Result.** All valid breath test results are reported on the Alcohol Influence Report to three decimal places. When a final breath test result is reported and recorded on the Alcohol Influence Report, that value is always the lowest value of the acceptable readings within tolerance. That value is reported and recorded as a truncated number on the Alcohol Influence Report to only two decimal places.<sup>16</sup>

**Simulator Solution Changes.** New Jersey protocol requires bottles to be changed after thirty days or twenty-five subject tests, or sooner if the instrument gives an error message that the solution is depleted.<sup>17</sup>

**List Temperature Probe.** The State must list the temperature probe serial number and probe value of that temperature probe on any report where such information is relevant, including the Alcohol Influence Report, New Standard Solution Change Report,

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<sup>12</sup> SMR227-28.

<sup>13</sup> SMR233(g).

<sup>14</sup> SMR234(g).

<sup>15</sup> SMR230; see SMR58, 19T178-79, 50T26, 50T30.

<sup>16</sup> SMR232(d).

<sup>17</sup> SMR41, 58; 50T84.

and Calibration Check documentation -- Calibration, Control Test Part I, and Linearity Part II Reports.<sup>18</sup>

**List Ertco-Hart.** The Ertco-Hart Digital Temperature Measuring System or other similar device must be traceable to the National Institute of Standards and Technology and must be in proper operating condition. The revised firmware shall require that the serial number of such devices be listed on all reports where such information is relevant, including calibration, certification, and linearity reports.<sup>19</sup>

**Publish Firmware Revisions.** The firmware version must be identified on Alcohol Influence Reports so that everyone will be aware of the firmware used to produce the reports.<sup>20</sup> The State must publish any firmware revisions through some reasonable mechanism, including placing this information on the State Police web site.<sup>21</sup>

**Locking Firmware.** Firmware must be "locked" -- meaning that if anyone modified the software, it would self-report as modified on the Alcohol Influence Report.<sup>22</sup>

**Error Messages.** In instances where a defendant is tested on an Alcotest 7110 and there is no reportable breath test value on the Alcohol Influence Report for that defendant, the Alcohol Influence Report must clearly show the source and reason why no breath test result was reported for that breath sample.<sup>23</sup> When tolerances are narrowed, the Alcohol Influence Reports should include an error message "tolerance out of range" when a second breath test did not meet the tolerance.<sup>24</sup>

**Refusal.** When there is no reportable breath test value on the Alcohol Influence Report, this non-reportable test event in itself shall not constitute a legal determination of refusal to submit to chemical breath testing under the implied consent statutes.<sup>25</sup>

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<sup>18</sup> SMR232(a), see SMR129.

<sup>19</sup> SMR234(i), see SMR120 and 129.

<sup>20</sup> SMR98, see SMR129-30; 60T25-26, 60T86-87.

<sup>21</sup> SMR232(b).

<sup>22</sup> SMR129, 232(c).

<sup>23</sup> SMR233(e).

<sup>24</sup> SMR98.

<sup>25</sup> SMR233(e).

**Provide Training.** The State shall provide regular, continuing, and meaningful training for attorneys and their experts consistent with that provided for certification of breath test operators and breath test coordinator instructors pursuant to the New Jersey Administrative Code at *N.J.A.C.* 13:51-1.1 to 1.14 and *N.J.A.C.* 13:51-2.1 to -2.2, respectively.<sup>26</sup>

### 3. Source Codes.

**Verify Firmware.** The software and firmware, which is integral to all functions, is presumed reliable in our courts **but only if the terms expressed in the attached Addendum A are scrupulously followed** by Draeger.<sup>27</sup>

**Two-Minute Lockout.** A two-minute lockout between tests is intended to provide further protection from mouth alcohol by preventing mouth alcohol inside the cuvette from contaminating the second sample.<sup>28</sup> The National Highway Traffic Safety Administration ["NHTSA"] of the U.S. Dept. of Transportation also recommended two to ten minutes between breath test sequences.<sup>29</sup> The State must program a two-minute lockout between tests to prevent mouth alcohol inside the cuvette from contaminating the second sample.<sup>30</sup>

### 4. RFI-EMI Interference.<sup>31</sup>

All State and local police departments must avoid potential radio frequency interference ["RFI"] and electro-magnetic interference ["EMI"] by maintaining a policy that any possible sources of RFI or EMI, such as walkie-talkies and cell phones, be banned from any area in proximity to the Alcotest instrument,<sup>32</sup> just as

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<sup>26</sup> SMR234-35(j).

<sup>27</sup> SMR236-41, Da15-16.

<sup>28</sup> SMR38; see SMR98, 116; 56T21, 60T27, 60T68-69; see also SMR168, 4T104.

<sup>29</sup> SMR116, 189; 60T28.

<sup>30</sup> SMR38, 98, 104, 168; 56T21, 60T27, 60T68-69. On occasion, programming failed to properly implement this safeguard. See SMR87, 116; 33T119, 51T73, 53T53, 59T64,

<sup>31</sup> It was disputed whether the Alcotest 7110 is adequately shielded from RFI/EMI. See SMR36-37, 242. But the defense abandoned the issue in exchange for a stipulation from the State that operators follow these practices. See 61T42.

<sup>32</sup> SMR242, see SMR37, 111; 52T95, 54T102, 58T62-63.

the New Jersey State Police Alcohol and Drug Test Unit ["ADTU"] instructs operators to keep portable radios and cell phones out of the room during breath testing.<sup>33</sup>

## 5. Foundational Evidence.

**Foundational Proofs.** To admit Alcotest 7110 results, the State must, in addition to the other safeguards and verification discussed herein, be accompanied by the appropriate foundational proofs,<sup>34</sup> including the documents listed at SMR244-45.

**Retain Documents.** The Alcohol Influence Report should be printed out.<sup>35</sup> If a testing sequence is terminated or aborted, the ADTU must instruct operators to retain documents.<sup>36</sup>

## 6. Breath Volume and Flow Rate.

**Minimum Criteria.** A suspect must deliver breath samples of a minimum volume of 1.5 liters. The minimum blowing time is 4.5 seconds. The minimum flow rate is 2.5 liters per minute. The breath sample when analyzed by the IR detector must reach or approach an equilibrium -- that is the infrared measure of the breath alcohol in the sample must not differ by more than one percent over .25 seconds. These are *minimum* criteria.<sup>37</sup> The Alcotest 7110 must be programmed to set a minimum of 1.2 liters for women over age sixty<sup>38</sup>, insofar as it accommodates a significant identifiable class of defendants adversely affected by current perimeters.

**Blowing Instructions.** Operators must change the mouthpiece after each breath sample and read specific blowing instructions to the subject. These instructions read: "I want you to take a deep breath and blow into the mouthpiece with one long, continuous

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<sup>33</sup> SMR37.

<sup>34</sup> SMR230(1); see SMR244-45.

<sup>35</sup> SMR248.

<sup>36</sup> SMR116, 52T96: Flanagan emphatically stated, "Everything is sequentially numbered. We don't destroy anything, whether it's good or bad. We save everything. They are not to destroy any documents."

<sup>37</sup> SMR245; see SMR37-38, 60.

<sup>38</sup> SMR246; see SMR98; see also SMR147, 10T34.

breath. Continue to blow until I tell you to stop. Do you understand these instructions?"<sup>39</sup>

## **7. Centralized Data Management.**

**Communication.** The State must implement the 7110's ability to communicate through the modem port with a central computer<sup>40</sup> to allow daily or weekly uploads of all data from each Alcotest 7110 in the State automatically.<sup>41</sup>

**Centralized Database.** The State must obtain and deploy a software program to create and maintain a centralized data base of digital information stored by all Alcotest 7110s throughout the State.<sup>42</sup>

**Data Discovery.** As to discovery data, the collected centralized historical data described shall be provided for any Alcotest 7110 relevant to a particular defendant's case in a digital format readable in Microsoft Access or similar program generally available to consumers in the open market. When such data includes tests from cases concerning defendants not part of the requesting defendant's case, the information provided will include departmental case numbers, ages, and breath temperatures or other relevant scientific data on those other defendants' tests but not their personal identifying information, such as name, address, birth date, drivers license number, license plate number, or social security number.<sup>43</sup>

## **8. Non-Operator Dependent.**

**Print and Disclose AIRs.** The Alcohol Influence Report should be printed out and a copy given to the suspect after the test is completed.<sup>44</sup>

**AIR Irregularities.** A municipal court judge should not rely on an alcohol test where the Alcohol Influence Report shows an irregularity.<sup>45</sup>

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<sup>39</sup> SMR111; 52T70, 75, 80.

<sup>40</sup> SMR247; see SMR104, 179.

<sup>41</sup> SMR247, see SMR43.

<sup>42</sup> SMR247-48; see SMR43, 98, 104, 179.

<sup>43</sup> SMR234(h).

<sup>44</sup> SMR248.

<sup>45</sup> SMR203, 18T96.

**20-Minute Observation.** With regard to mouth alcohol, operators must continuously observe a subject for a full twenty minutes, without interruption, before they can begin the breath test.<sup>46</sup> There should be face-to-face observation to make sure that the subject does not have access to anything that could influence the test results.<sup>47</sup> During that time, the subjects cannot have any substances in their mouths nor can they regurgitate or burp.<sup>48</sup> If any substances enter the mouth or a subject regurgitates, the 20 minutes must start over again.<sup>49</sup> If there are any interruptions, the 20 minutes must start over again.<sup>50</sup> Also, the 20-minute period also must restart if there were any interruptions in the officer's observation of the subject.<sup>51</sup>

#### **9. Breath Temperature Sensor.**

New Jersey should employ Draeger's breath temperature sensor. Unless such breath temperature sensing is implemented, all breath test results should be reduced downward by 6.58 percent. This is a biological variable which can and should be controlled.<sup>52</sup>

#### **10. Tolerances for the Two Breath Tests.**

**Narrower Agreement.** The Alcotest 7110 must be programmed to a tolerance of plus or minus .005 or plus or minus five percent (10 percent overall) of the mean of the four readings (two EC and two IR) whichever is greater.<sup>53</sup>

**Margin of Error.** Apart from and in addition to physiological variability, there is a margin of error inherent for the Alcotest 7110 of plus or minus .005 breath alcohol content (absolute tolerance) or plus or minus five percent (relative tolerance), whichever was greater.<sup>54</sup>

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<sup>46</sup> SMR38, SMR113; 52T70-72.

<sup>47</sup> SMR168, 6T144-45.

<sup>48</sup> SMR38.

<sup>49</sup> SMR113, 52T72.

<sup>50</sup> SMR38.

<sup>51</sup> SMR113-14, 60T10.

<sup>52</sup> SMR250, see SMR77.

<sup>53</sup> SMR251, see SMR121.

<sup>54</sup> SMR59; Ryser at 50T17-18, 51T64, 61T65, 61T71-72.

Considering these findings, this Court should have grave reservations about holding the Alcotest 7110 scientifically reliable for defendants with presently pending cases.

## COMMENTS ON STATE'S WITNESSES

Judge King held all witnesses, with the exception of Gerald Simpson, credible. Although the defense has a higher opinion of Simpson, nonetheless, these credibility findings are generally fair. However, this Court should remember the biases, prejudices, limitations, and interests of the various witnesses.

**Hansueli Ryser**, an electrical engineer, is vice president in charge of the Durango operations for Draeger Safety Diagnostics, Inc.,<sup>55</sup> and was qualified as an expert in electrical engineering and breath-testing devices.<sup>56</sup> He has no training in physiology and relies on other experts concerning physiological issues.<sup>57</sup> He is the *de facto* chief of Alcotest sales and promotion throughout the world. His principle interest is keeping drunks off the road.

However, Ryser's expertise was specifically limited to the area of electrical engineering and breath testing.<sup>58</sup> He has no expertise in statistics, computer software, physiology and its effect on breath testing among other substantive areas testified about in this litigation. Moreover, he has little knowledge to impart to the court concerning patents, trade secrets, trademarks, and copyright infringement.

Ryser values convictions over science.<sup>59</sup> He says what fits

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<sup>55</sup> 19T15.

<sup>56</sup> SMR47-48.

<sup>57</sup> 19T36.

<sup>58</sup> SMR47-48; SMR59; 19T15, 19T78, 50T17-50T18, 51T64, 61T65, 61T71-61T72.

<sup>59</sup> 23T24-23T26.

the sales situation -- touting breath temperature monitoring and other physiological issues in Taiwan where the prospects were interested,<sup>60</sup> pooh-poohing it where they weren't.<sup>61</sup> Most importantly, Ryser was the most self-interested witness to testify in the entire case.

His company has so far retained more than six million dollars in revenues from sales of the instrument. He seeks the profits of sales of additional machines, component parts, and thousands of bottles of simulator solution per year at \$7 per bottle, all enriching Draeger on a continuing basis. Accepting the Alcotest as reliable likely leads to more sales as other jurisdictions adopt this process.

**Thomas A. Brettell, Ph.D.**, the State's chief forensic scientist and designee entrusted with Alcotest 7110 selection, conceded that he is *not* a computer expert. He "did not perform additional testing and validation,"<sup>62</sup> and "never asked Draeger for the Alcotest 7110's source codes."<sup>63</sup> He lacked direct expertise on physiology and, although claiming to verify firmware, had no expertise or competence to do so. His limitations are discussed further *infra*.

**Sgt. Kevin M. Flanagan**, a member of the New Jersey State Police for about 20 years,<sup>64</sup> he is presently assigned to the Alcohol Drug Test Unit entrusted with overseeing the Alcotest

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<sup>60</sup> 61T45-61T46; D-223 at 78-79.

<sup>61</sup> See 19T180-19T181.

<sup>62</sup> SMR30.

<sup>63</sup> SMR97, 34T12.

7110 program in New Jersey.<sup>65</sup> If Dr. Brettell can fairly be characterized as the architect of the entire program, Flanagan is the chief overseer and manager of its implementation in New Jersey.<sup>66</sup> Yet, he has no formal managerial experience but for a supervision class offered by the State Police.<sup>67</sup> His management style can best be described as being "a telephone kind of guy."<sup>68</sup> He was qualified as an expert in the use of the Alcotest 7110,<sup>69</sup> but had never before testified in court concerning the Alcotest program that he was "rolling out" in New Jersey.<sup>70</sup>

He conveyed personal knowledge of the inherent problems associated with implementing the Alcotest for use in New Jersey. The court learned that 'special reports' detailing such problems were instituted by virtue of this litigation. He could not opine with any specificity about any issues affecting the Alcotest directly in the field outside of the "Middlesex universe" since the State has no capability to meaningfully analyze any such data. The experiment that Flanagan conducted for the court on November 27, 2006 concerning simulator solution was the highlight of his time before the court. By any objective interpretation, his testing on that occasion failed to support the 'control test' safeguard associated with the Alcotest verification methodology.

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<sup>64</sup> 52T8.

<sup>65</sup> 52T11.

<sup>66</sup> 52T13.

<sup>67</sup> 54T87-88.

<sup>68</sup> 55T23-24.

<sup>69</sup>

<sup>70</sup> 52T34.

**Edward Conde**, essentially a functionary of the National Highway Traffic Safety Administration, had no computer expertise, relied too heavily on the proponents of the devices he was testing, followed very circumscribed testing procedures, and, regardless of his lack of any bad intent, destroyed data he should have kept.

**Rod G. Gullberg**, is a biostatistician who has worked for the Washington State Patrol in various capacities since 1972,<sup>71</sup> he attempted to analyze data provided to him from New Jersey. He knew nothing of the technical details of Alcotest firmware.<sup>72</sup> Although he probably meant well and his exhibits were superficially impressive, his statistical analysis was limited numerically, in quality, and in depth of analysis given the limited time he had within which to do his job. His attempt at verification is discussed *infra*.

**Samuel E. Chappell, Ph.D.**, 38 years with the National Institute of Standards and Technology ["NIST"] until he retired in 2000, provided valuable insight into the International Organization of Legal Metrology ["OIML"] and recommendations of the International Standards Organization ["ISO"].

**Barry K. Logan, Ph.D.**, Washington's state toxicologist and Director of Laboratory Services Bureau for the State Patrol,<sup>73</sup> he provided a general physiological orientation, but had no computer expertise. Nor had he ever used an Alcotest 7110 or had its

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<sup>71</sup> 7T57-59.

<sup>72</sup> SMR150, 13T8.

software tested.<sup>74</sup>

**J. Robert Zettl**, developed and implemented the Colorado Department of Public Health breath testing program in 1969. Since his retirement "about six, seven years ago," he engages in consulting and teaching endeavors.<sup>75</sup> The court qualified Zettl as an expert in forensic sciences, specifically relating to alcohol breath testing.<sup>76</sup> He acknowledged having no formal training in computer science.<sup>77</sup> While Zettl was a most amiable witness, his personal knowledge of New Jersey's Alcotest 7110 program was limited to a two day "show and tell" of the instrument provided by the State in June of last year.<sup>78</sup>

**Patrick M. Harding**, has worked for the State Laboratory of Hygiene in Wisconsin since 1977. For the past six years, he has worked as the section chief of the Toxicology Section therein.<sup>79</sup> Harding was offered by the State as an expert in forensic chemistry and breath testing.<sup>80</sup> There is no specific reference in the trial record that the Court qualified him as such. He was a prolific witness who had testified between 500 and 550 occasions in four separate states.<sup>81</sup> He had no real training on physiology or computer software. A fair review of the record below reveals Harding to be the most contentious witness offered by either

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<sup>73</sup> 4T36.

<sup>74</sup> 5T8-9.

<sup>75</sup> 53T66.

<sup>76</sup> 53T75, 90.

<sup>77</sup> 53T81.

<sup>78</sup> 53T 81.

<sup>79</sup> 26T39-42.

<sup>80</sup> 26T45.

party in the entire case. Upon a defense motion to strike his testimony at its conclusion, Judge King stated, "Well, I think there may be some smidgen of merit to your application. He was sort of conclusory in his situation...."<sup>82</sup> The Judge added further, "There were certain aspects of his testimony which were not necessarily quintessentially scientific, shall we say."<sup>83</sup>

**Norman J. Dee** is a computer science professional who has worked for the CMX group since 1984. Interestingly, his academic pedigree began with a Bachelor of Arts degree in music from Juilliard. He does not hold any graduate degree in computer science.<sup>84</sup> Dee was qualified by the Court as an expert in computer science, particularly in systems auditing and computer measurement. He had never previously appeared before as an expert witness in any court.<sup>85</sup> While Dee proved to be a particularly genteel witness, his contribution to the case is perplexing. He was candid in delineating his lack of knowledge relating to breath testing devices. Two defense attorneys who cross-examined every other State's expert in this litigation chose not to question him.

**Stephen B. Seidman, Ph.D.**, is an academic who is currently the Dean of the College of Natural Sciences and Mathematics at the University of Central Arkansas.<sup>86</sup> He was qualified as an

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<sup>81</sup> 26T45.

<sup>82</sup> 30T4-5.

<sup>83</sup> 30T6.

<sup>84</sup> 30T7, 14.

<sup>85</sup> 30T25.

<sup>86</sup> 16T21.

expert in the area of software engineering.<sup>87</sup> He had never been qualified as an expert witness prior to this case.<sup>88</sup> He professed no knowledge of physiology or breath testing. While proving to be an affable witness, Seidman's purported purpose in this case was to buttress the software embedded in the Alcotest hardware yet he never sought to examine its source code.<sup>89</sup>

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<sup>87</sup> 16T69.

<sup>88</sup> 16T60-61.

<sup>89</sup> 16T65.

## COMMENTS ON THE SPECIAL MASTER'S REPORT

### A.

ANY PROSECUTION BASED ON EVIDENCE THAT DEFENDANTS' ARE NOT PERMITTED TO ACCESS, ASSESS, OR UNDERSTAND IS A VIOLATION OF DUE PROCESS UNDER THE FOURTEENTH AMENDMENT OF THE UNITED STATES CONSTITUTION AND ARTICLE 1, PARAGRAPH 10, OF THE NEW JERSEY CONSTITUTION.

### I.

#### DUE PROCESS:

When Charged with Following Strict Application of the Scientific Method in Evaluating a New Process for Measuring Breath Alcohol, the State, via Its Proxy Draeger, Violated Defendants' Right to Due Process by Failing to Provide Source Code that Runs the Machine.

**Draeger Stonewalling.** On February 3, 2006, Judge King entered an Order directing the State to give defendants certain information, documents and materials pertaining to the Alcotest 7110's firmware, software, algorithms, electronic schematics, and source codes.<sup>90</sup> From the outset, Draeger, asserting that they were not a party to this action, rejected discovery of source codes by the defense, even pursuant to a reasonable protective order.<sup>91</sup> Draeger's rebuff of this Court's invitation to intervene and defend its product in the customary manner made discovery difficult.<sup>92</sup> Eventually, Draeger offered to explain the source code to this Court *ex parte* and *in camera* without a record.<sup>93</sup> The defense understandably rejected such an arrangement.<sup>94</sup> Draeger then suggested a very restricted review of source codes under

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<sup>90</sup> SMR9; see Da17-26.

<sup>91</sup> SMR235, see SMR9.

<sup>92</sup> SMR235, see SMR13.

<sup>93</sup> SMR235.

<sup>94</sup> SMR235.

highly-restrictive conditions in Durango, Colorado.<sup>95</sup> Neither the State nor defense expressed any interest in complying with Draeger's "fastidious conditions" on source code disclosure,<sup>96</sup> which were "impractical and unhelpful."<sup>97</sup> Ironically, Ryser had no comprehension, despite consulting counsel, that providing source code pursuant to this Court's order, was not tantamount to disclosing the code to his competitors and that the Court would protect Draeger from unauthorized disclosure.<sup>98</sup>

**Late Offer to Disclose.** Finally, during trial, Draeger offered its source codes of some 896 pages and 53,774 lines for examination in New Jersey at the trial site by defense experts, but, by this time, it was too late.<sup>99</sup> Such an examination would have taken weeks and considerable expense and delayed the trial perhaps into the summer; also, no qualified electronic experts were immediately at hand.<sup>100</sup> The parties seemed at a stand-off over the source code issue, and this Court was left to decide whether or not the so-called "black box" verification of the computer system in the Alcotest 7110 was scientifically reliable.<sup>101</sup>

**No Patents or Trade Secrets.** While Judge King stated that Draeger "holds several patents for certain processes within the

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<sup>95</sup> SMR235, see SMR68.

<sup>96</sup> SMR13,

<sup>97</sup> SMR235, see SMR9-13.

<sup>98</sup> 22T60-61.

<sup>99</sup> SMR235.

<sup>100</sup> SMR235-36.

<sup>101</sup> SMR236.

system"<sup>102</sup> and spoke of Draeger's desire "to avoid disclosure of company 'trade secrets,'"<sup>103</sup> Draeger could identify no patents or other protectable intellectual property rights.<sup>104</sup>

**Negotiations for Disclosure and Verification.** Even though this Court had warned Draeger that it could make a negative inference against Alcotest reliability for withholding relevant information, the defense engaged Draeger in negotiations to resolve this stand-off,<sup>105</sup> and reached a tentative agreement in principle relating to the source code issue and techniques to insure the Alcotest 7110's scientific reliability, foregoing further cross-examination of Ryser and limiting the direct defense case.<sup>106</sup> For its part, Draeger, in consultation with its counsel, prevented direct disclosure of its source code and agreed to terms to insure the on-going integrity of the software/firmware codes and algorithms in a document termed "Addendum A" and introduced as D-232.<sup>107</sup> This agreement negotiated by defense attorney Samuel Louis Sachs summarizes a necessary safeguard to assure reliability and is discussed *infra*.

**White-Box/Black-Box.** Essentially, to assure that hardware and firmware work in concert to report a reliable result, this "Sachs' protocol" combines "white-box" review of firmware with "black-box" testing according to OIML standards, an international

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<sup>102</sup> 19T38, 20T21-22.

<sup>103</sup> 20T22, 22T67.

<sup>104</sup> 22T66-67.

<sup>105</sup> SMR236.

<sup>106</sup> SMR68, *see* 61T6-15.

<sup>107</sup> SMR236, Da27-28.

treaty organization established in 1955 to address issues relating to the application of common legal measurements by its member countries.<sup>108</sup> Under OIML standards, legal measuring instruments must be evaluated in accordance with certain performance criteria and testing methodology, and results must be reported in a standardized format.<sup>109</sup>

**OIML Standards.** OIML's standards are more stringent than NHTSA's 1993 model specifications currently in use.<sup>110</sup> For example, OIML Recommendation 126 ["R126"] advises testing for nine interferences, while NHTSA tests only for acetone.<sup>111</sup> R126 recommends tests for RFI or electromagnetic compatibility over a range of electromagnetic frequencies and at specified field strengths, which NHTSA does not require.<sup>112</sup> R126 includes, *inter alia*, tests for vibration, mechanical shock, electrostatic discharge, damp heat cycles, and storage conditions.<sup>113</sup> Judge King's characterization that OIML requirements have been "diluted over time"<sup>114</sup> is not supported by the record.<sup>115</sup> OIML standards are more complete and reflect a preference for more rigorous legal measurement and uniformity in metrological control.<sup>116</sup>

**No Repair Records.** When a police department reports a hardware problem rendering an instrument inoperable, the ADTU

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<sup>108</sup> SMR154; 3T76, 3T97, 3T156-57.

<sup>109</sup> SMR154, 3T98.

<sup>110</sup> SMR155; 3T101, 3T104, 3T170-73.

<sup>111</sup> SMR155, 3T104.

<sup>112</sup> SMR155, 3T104.

<sup>113</sup> SMR155, 3T183-85.

<sup>114</sup> SMR49.

<sup>115</sup> See 51T102-03.

instructs the operator to use an Alcotest 7110 in a nearby town and sends a coordinator to see if the problem can be resolved.<sup>117</sup> If not, the local department returns the instrument to Draeger for repair and keeps certain repair records.<sup>118</sup> Draeger neither produced such records nor presented any to this Court.

**Adverse Inference.** Judge King noted that Ryser "seemed understandably uncomfortable at his company's secrecy and reluctance to disclose information."<sup>119</sup> Ironically, Ryser was the principal architect of this secrecy. Yet despite such stonewalling, Judge King rewarded Draeger by not indulging in any negative inference against Draeger, despite its grudging attitude with respect to source code disclosure,<sup>120</sup> relying on "Ryser's forthright testimony" and "the parties' agreement to this reliability undertaking."<sup>121</sup> But failing to draw the adverse inference rewards Draeger for its brazenly arrogant and calculated defiance of this Court's mandates for commercial gain at the expense of New Jersey's citizens.

**Conclusion.** How this testimony and future agreement translate into present reliability is not explained. The need to have verification testing pursuant to the Sachs' protocol contradicts Judge King's finding "that the 'black box' testing of the computer system and source codes used to date is

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<sup>116</sup> SMR156, 3T178-79.

<sup>117</sup> SMR105, 60T10-11.

<sup>118</sup> SMR105, 52T120.

<sup>119</sup> SMR70.

<sup>120</sup> SMR241.

<sup>121</sup> SMR241.

scientifically reliable."<sup>122</sup> Gerald Simpson, Ph.D., considered the Alcotest 7110 a black box which was not amenable to scientific methodology.<sup>123</sup> Because a microprocessor and software controlled the instrument's operation, he said there was no way to know whether it did what it was supposed to do for each subject.<sup>124</sup>

## II.

### CONFRONTATION:

#### **The Failure to Disclose Source Code Deprive Defendants of Critical Information and Prejudiced Their Ability to Adequately Defend Themselves.**

The Due Process Clause of the Fourteenth Amendment requires the State to disclose to criminal defendants favorable evidence that is material either to guilt or to punishment.<sup>125</sup> Under the Due Process Clause, "criminal prosecutions must comport with prevailing notions of fundamental fairness."<sup>126</sup> The U.S. Supreme Court has "long interpreted this standard of fairness to require that criminal defendants be afforded a meaningful opportunity to present a complete defense."<sup>127</sup> To safeguard that right, the Court has developed "what might loosely be called the area of constitutionally guaranteed access to evidence."<sup>128</sup> "Taken

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<sup>122</sup> SMR241.

<sup>123</sup> SMR211, 63T56-57.

<sup>124</sup> SMR211, 63T56-57.

<sup>125</sup> *U.S. v. Agurs*, 427 U.S. 97, 96 S.Ct. 2392, 49 L.Ed.2d 342 (1976); *Brady v. Maryland*, 373 U.S. 83, 83 S.Ct. 1194, 10 L.Ed.2d 215 (1963).

<sup>126</sup> *California v. Trombetta*, 467 U.S. 479, 485, 104 S.Ct. 2528, 81 L.Ed.2d 413 (1984).

<sup>127</sup> *Id.*

<sup>128</sup> *Id.*, citing *U.S. v. Valenzuela-Bernal*, 458 U.S. 858, 867, 102

together, this group of constitutional privileges delivers exculpatory evidence into the hands of the accused, thereby protecting the innocent from erroneous conviction and ensuring the integrity of our criminal justice system."<sup>129</sup>

In *California v. Trombetta*, a DWI-based case involving preservation of Intoxilyzer breath samples, the Court held against a claim that breath samples must be preserved, noting that several safeguards existed in that case. Specifically: "To protect against faulty calibration, California gives drunken driving defendants the opportunity to inspect the machine used to test their breath as well as that machine's weekly calibration results and the breath samples used in the calibrations.... Respondents could have utilized these data to impeach the machine's reliability."<sup>130</sup> "As to improper measurements, the parties have identified only two sources capable of interfering with test results: radio waves and chemicals that appear in the blood of those who are dieting."<sup>131</sup> "For defendants whose test results might have been affected by either of these factors, it remains possible to introduce at trial evidence demonstrating that the defendant was dieting at the time of the test or that the test was conducted near a source of radio waves."<sup>132</sup>

While the latter conditions of dieting and radio waves might raise doubt in a trial, the former safeguard of weekly

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*S.Ct.* 3440, 73 *L.Ed.2d* 1193 (1982).

<sup>129</sup> *California v. Trombetta*, *supra*, 467 *U.S.* at 490.

<sup>130</sup> *Id.*, 427 *U.S.* at 482.

<sup>131</sup> *Id.*

calibration data is absent with the Alcotest. Alcotest Defendants have no alternative means to demonstrate innocence. Assessment of faulty calibration, extraneous interference with machine measurements, and operator error means nothing without an analysis of the computer code that runs the machine. This is especially so where every State's expert agreed that a computer can be programmed to do or say whatever the programmer wants the result to be.

Draeger has refused to disclose Alcotest 7110 source code despite the Special Master's offer of a reasonable protective order. Even in the absence of a Court Rule or constitutional mandate, New Jersey courts have "the inherent power to order discovery when justice so requires."<sup>133</sup> Failure to provide discovery can violate due process. Our courts have identified three factors on which to focus in determining whether a due process violation has occurred when there has been suppression, loss, or destruction of physical evidence: (1) the bad faith or connivance by the government; (2) whether the evidence was sufficiently material to the defense; and (3) whether the defendant was prejudiced.<sup>134</sup> To be material, evidence must both

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<sup>132</sup> *Id.*

<sup>133</sup> *State ex rel. W.C.*, 85 N.J. 218, 221 (1981); *see, e.g., State v. Cook*, 43 N.J. 560, 569 (1965) (permitting defendant to view State's psychiatric reports on defendant); *State v. Moffa*, 36 N.J. 219, 222 (1961) (permitting defendant to inspect witness's grand jury testimony); *State v. Butler*, 27 N.J. 560, 605 (1958) (compelling witness to submit to psychiatric examination by defendant's expert).

<sup>134</sup> *See State v. Hollander*, 201 N.J. Super. 453, 479 (App.Div.), *certif.den.* 101 N.J. 335 (1985). *See also State v. Carter*, 85

possess an exculpatory value that is readily apparent before it is either destroyed or otherwise made unavailable and "be of such a nature that the defendant would be unable to obtain comparable evidence by other reasonably available means."<sup>135</sup>

Here, the State through its vendor withheld critical information -- computer source code -- notwithstanding this Court's direct Order (via Judge King) to produce the code. This violation of this Court's order constitutes bad faith or connivance by Draeger's and, derivatively, the State. There can be no question that source code for the machine is material to determine whether it does what Draeger says it does. Without independent analysis of the source code, there is no way to determine whether computer coding corrects machine errors or self calibrates. Assessment of future versions via a negotiated protocol<sup>136</sup> cannot establish that the present source code version 3.11 is accurate and reliable. Draeger's abject refusal to disclose is tantamount to destruction.

Not only are thousands of Defendants whose cases are based on software version 3.11 prejudiced by Draeger's failure to turn over the source code, but New Jersey's taxpayers, prosecutors, and courts are prejudiced, as well. Rather than disclosing the paradigm on which this machine operates, Draeger and the State tell us all, "Trust us, it works." But we cannot trust an entity

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*N.J.* 300 (1981).

<sup>135</sup> *California v. Trombetta, supra*, 467 U.S. at 489; *State v. Hollander, supra*, 201 N.J.Super. at 479-80.

<sup>136</sup> See SMR235-42.

that has wrongly held secrets, that has sold more than six million dollars in hardware so far to New Jersey, and which stands to make millions more on hardware and simulator solution sales in this State and across the country if this Court finds the Alcotest 7110 to be reliable. Present, not future, disclosure would assure reliability and comport with due process.

In *Murray v. Carrier*,<sup>137</sup> the trial judge denied the defendant's pretrial motion to discover a victim's statements to police describing her assailants, their vehicle, and location of an alleged rape. Justice Stevens, concurring, stated, "By denying those motions, the trial court significantly curtailed the defendant's ability to cross-examine the prosecution's most important witness, and may well have violated the defendant's right to review 'evidence favorable to an accused upon request ... where the evidence is material either to guilt or to punishment.'" <sup>138</sup> He continued, "That right is unquestionably protected by the Due Process Clause."<sup>139</sup> "Indeed, the Court has repeatedly emphasized the fundamental importance of that federal right."<sup>140</sup> "[T]he requirement of due process [is] to ensure that a miscarriage of justice does not occur"<sup>141</sup> "The principle...is not punishment of society for misdeeds of a prosecutor but

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<sup>137</sup> 477 U.S. 478, 498-99, 106 S.Ct. 2639, 91 L.Ed.2d 397 (1986).

<sup>138</sup> *Murray v. Carrier*, *id.*, quoting *Brady v. Maryland*, 373 U.S. 83, 87, 83 S.Ct. 1194, 10 L.Ed.2d 215 (1963).

<sup>139</sup> *Id.*; see also *U.S. v. Bagley*, 473 U.S. 667, 105 S.Ct. 3375, 87 L.Ed.2d 481 (1985), and *U.S. v. Agurs*, *supra*.

<sup>140</sup> *Id.*

<sup>141</sup> *U.S. v. Bagley*, *supra*, 473 U.S. at 675.

avoidance of an unfair trial to the accused."<sup>142</sup> "Society wins not only when the guilty are convicted but when criminal trials are fair; our system of the administration of justice suffers when any accused is treated unfairly."<sup>143</sup> Justice Stevens continued:

The constitutional claim advanced by respondent calls into question the accuracy of the determination of his guilt. On the record before us, however, we cannot determine whether or not he is the victim of a miscarriage of justice. Respondent argues that the trial court's analysis was severely flawed.... **Even if the trial judge applied the correct standard, the conclusion that there was no "exculpatory" material in the victim's statements does not foreclose the possibility that inconsistencies between the statements and the direct testimony would have enabled an effective cross-examination to demonstrate that respondent is actually innocent....** On the other hand, it is possible that other evidence of guilt in the record is so overwhelming that the trial judge's decision was clearly not prejudicial to the defendant. The important point is that **we cannot evaluate the possibility that respondent may be the victim of a fundamental miscarriage of justice without any knowledge about the contents of the victim's statements.**<sup>144</sup>

By failing to follow this Court's Order to turn over the source code for this machine, Draeger and the State have significantly curtailed the Defendants' ability to cross-examine the prosecution's most important witness, the machine, and may well have violated the Defendants' right to review "evidence favorable to an accused upon request...where the evidence is

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<sup>142</sup> *Brady v. Maryland*, 373 U.S. 83, 87, 83 S.Ct. 1194, 10 L.Ed.2d (1963).

<sup>143</sup> *Id.*

<sup>144</sup> *Murray v. Carrier*, *supra*, 477 U.S. at 499 (footnotes omitted) (emphases added).

material either to guilt or to punishment."<sup>145</sup> This constitutional claim calls into question the accuracy of the determination of anyone's guilt according to this machine. Without such information, this Court cannot determine whether or not the many defendants affected are the victim of a miscarriage of justice. This Court cannot evaluate whether these defendants may be victims of a fundamental miscarriage of justice without any knowledge about the contents of the machine upon which they are being prosecuted and, perhaps, convicted.

"Whether rooted directly in the Due Process Clause of the Fourteenth Amendment or in the Compulsory Process or Confrontation clauses of the Sixth Amendment, the Constitution guarantees criminal defendants 'a meaningful opportunity to present a complete defense.'"<sup>146</sup>

"[B]y evaluating the strength of only one party's evidence, no logical conclusion can be reached regarding the strength of contrary evidence offered by the other side to rebut or cast doubt."<sup>147</sup> Such is the situation in this case. Without an analysis of the program that runs the machine, there can be no meaningful analysis of the scientific reliability of the Alcotest.

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<sup>145</sup> *U.S. v. Agurs, supra; Brady v. Maryland, supra.*

<sup>146</sup> *Crane v. Kentucky*, 476 U.S. 683, 690, 106 S.Ct. 2142, 90 L.Ed.2d 636 (1986), quoting *California v. Trombetta, supra*, 467 U.S. at 485.

<sup>147</sup> *Holmes v. South Carolina*, \_\_\_ U.S. \_\_\_, \_\_\_, 126 S.Ct. 1727, 1735, 164 L.Ed.2d 503 (2006).

B.

**FAILURE TO PRODUCE THE COMPUTER SOURCE CODE  
VIOLATES DEFENDANTS' SIXTH AMENDMENT RIGHTS TO  
CONFRONTATION.**

"A citizen's right to drive, and sometimes to liberty, will depend on the verdict of a machine."<sup>148</sup> This machine -- the Alcotest 7110 -- depends on source code and computer chips. Without disclosure of this computer-based process, the Alcotest 7110 will not function at all, and there will be no *per se* prosecution of any defendants. While the computer program is inanimate, it is clearly a witness giving testimony against any defendant charged with a *per se* offense under our drinking-driving laws.<sup>149</sup> "In all criminal prosecutions, the accused shall enjoy the right to be confronted with the witnesses against him."<sup>150</sup>

This right to confrontation is fundamental and essential to a fair trial in a criminal prosecution.<sup>151</sup> "[A] major reason underlying the constitutional confrontation rule is to give a defendant charged with crime an opportunity to cross-examine the witnesses against him."<sup>152</sup> As a result, "it cannot seriously be doubted at this late date that the right of cross-examination is included in the right of an accused in a criminal case to

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<sup>148</sup> *State v. Garthe*, 145 N.J. 1, 12 (1996).

<sup>149</sup> Drinking-driving laws include N.J.S. 12:7-46, N.J.S. 39:3-10.13, N.J.S. 39:4-50, N.J.S. 39:4-50.14, and other statutes defining offenses where such evidence is relevant.

<sup>150</sup> *U.S. Const. Amend. VI*.

<sup>151</sup> *Pointer v. Texas*, 380 U.S. 400, 403-04, 85 S.Ct. 1065, 13 L.Ed.2d 923 (1965).

<sup>152</sup> *Id.*, 380 U.S. at 406-07.

confront the witnesses against him."<sup>153</sup> In fact: "There are few subjects, perhaps, upon which this Court and other courts have been more nearly unanimous than in their expressions of belief that the right of confrontation and cross-examination is an essential and fundamental requirement for the kind of fair trial which is this country's constitutional goal."<sup>154</sup> "Indeed, we have expressly declared that to deprive an accused of the right to cross-examine the witnesses against him is a denial of the Fourteenth Amendment's guarantee of due process of law."<sup>155</sup>

The U.S. Supreme Court's recent decision in *Crawford v. Washington*<sup>156</sup> reexamined the application of the Confrontation Clause in criminal prosecutions, reversed the erosion of Confrontation Clause rights exemplified by the Court's decision in *Ohio v. Roberts*<sup>157</sup> and re-established the fundamental importance of testing evidence by cross examination. *Crawford* holds that out-of-court statements by witnesses that are testimonial in nature are barred under the *Confrontation Clause* unless witnesses are unavailable and defendants had prior opportunity to cross-examine witnesses, regardless of whether such statements are deemed reliable by court, abrogating *Ohio v. Roberts*.

Draeger has made the source code and computer program

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<sup>153</sup> *Id.* at 404.

<sup>154</sup> *Pointer v. Texas, supra*, 380 U.S. at 405.

<sup>155</sup> *Id.*

<sup>156</sup> 541 U.S. 36, 124 S.Ct. 1354 (2004).

<sup>157</sup> 448 U.S. 56, 100 S.Ct. 2531, 56 L.Ed.2d 597 (1980).

unavailable. While the facts of *Crawford*<sup>158</sup> are not analogous to a DWI matter, the holding of the Court is clear and unequivocal. "In all criminal prosecutions, the accused shall enjoy the right ... to be confronted with the witnesses against him.' We have held that this bedrock procedural guarantee applies to both federal and state prosecutions."<sup>159</sup>

In setting forth the history of the *Confrontation Clause*, Justice Scalia stated, "[T]he Framers would not have allowed admission of testimonial statements of a witness who did not appear at trial unless he was unavailable to testify, and the defendant had had a prior opportunity for cross-examination. The text of the *Sixth Amendment* does not suggest any open-ended exceptions from the confrontation requirement to be developed by the courts."<sup>160</sup> "Even where the defendant had such an opportunity [to cross examine in a prior proceeding], we excluded the testimony where the government had not established unavailability of the witness."<sup>161</sup> The Supreme Court "similarly excluded accomplice confessions where the defendant had no opportunity to cross-examine."<sup>162</sup> Justice Scalia noted, "In contrast, we

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<sup>158</sup> *Crawford* involved a domestic violence matter where the husband allegedly stabbed his wife. During investigation, the wife made a statement to police officers regarding the incident. The State of Washington sought to use that statement in the trial, since marital privilege precluded wife's testimony.

<sup>159</sup> *U.S. Const.* Amend.VI; *Crawford v. Washington, supra*, 541 *U.S.* at 42; *Pointer v. Texas, supra*, 380 *U.S.* at 406.

<sup>160</sup> *Crawford v. Washington, supra*, 541 *U.S.* at 53-54.

<sup>161</sup> See *Barber v. Page*, 390 *U.S.* 719, 722-725, 88 *S.Ct.* 1318, 20 *L.Ed.2d* 255 (1968); cf. *Motes v. U.S.*, 178 *U.S.* 458, 470-471, 20 *S.Ct.* 993, 44 *L.Ed.* 1150 (1900).

<sup>162</sup> *Crawford v. Washington, supra*. See *Roberts v. Russell*, 392

considered reliability factors beyond prior opportunity for cross-examination when the hearsay statement at issue was not testimonial."<sup>163</sup> He stated:

Where testimonial statements are involved, we do not think the Framers meant to leave the *Sixth Amendment's* protection to the vagaries of the rules of evidence, much less to amorphous notions of "reliability." ... Admitting statements deemed reliable by a judge is fundamentally at odds with the right of confrontation. To be sure, the Clause's ultimate goal is to ensure reliability of evidence, but it is a procedural rather than a substantive guarantee. It commands, not that evidence be reliable, but that reliability be assessed in a particular manner: by testing in the crucible of cross-examination. The Clause thus reflects a judgment, not only about the desirability of reliable evidence (a point on which there could be little dissent), but about how reliability can best be determined.<sup>164</sup>

Justice Scalia cautioned against the "unpardonable vice" in "its demonstrated capacity to admit core testimonial statements that the *Confrontation Clause* plainly meant to exclude."<sup>165</sup> "The *Constitution* prescribes a procedure for determining the reliability of testimony in criminal trials, and we, no less than the state courts, lack authority to replace it with one of our own devising."<sup>166</sup> In sum, where testimonial evidence is at issue, the *Sixth Amendment* demands what the common law required:

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*U.S.* 293, 294-295, 88 *S.Ct.* 1921, 20 *L.Ed.2d* 1100 (1968) (per curiam); *Bruton v. U.S.*, 391 *U.S.* 123, 126-28, 88 *S.Ct.* 1620, 20 *L.Ed.2d* 476 (1968); *Douglas v. Alabama*, 380 *U.S.* 415, 418-420, 85 *S.Ct.* 1074, 13 *L.Ed.2d* 934 (1965).

<sup>163</sup> *Crawford v. Washington*, *supra*. See *Dutton v. Evans*, 400 *U.S.* 74, 87-89, 91 *S.Ct.* 210, 27 *L.Ed.2d* 213 (1970) (plurality opinion).

<sup>164</sup> *Crawford v. Washington*, *supra*.

<sup>165</sup> *Id.*, 541 *U.S.* at 63.

<sup>166</sup> *Id.*, 541 *U.S.* at 67.

unavailability and a prior opportunity for cross-examination.<sup>167</sup>

This Court recently recognized the enormity of *Crawford* in *State v. Branch*.<sup>168</sup> The Court reversed the defendant's conviction where a detective included the defendant's picture in a photographic array shown to witnesses, because he had developed defendant as a suspect "based on the information received", constituted inadmissible hearsay, and the admission of such testimony, therefore, violated defendant's confrontation rights in a burglary and robbery trial. The Court decided the case on state evidentiary grounds, but stated the following:

Although we decide this case based on our interpretation of an evidentiary rule, our analysis is informed by the principles undergirding the Confrontation Clause jurisprudence of our federal and state constitutions. In that regard, we must take notice of the potential impact that the recent watershed decision in *Crawford, supra*, will have on the introduction of "testimonial" hearsay through the excited utterance exception and other hearsay exceptions.<sup>169</sup>

The *Branch* Court did not further assess what testimonial hearsay was, stating, "We do not have to decide whether Detective Calvin's questioning of Juliana was 'police interrogation' or whether her statement was 'testimonial' in the manner understood in *Crawford*,... because we can resolve this case on state evidentiary grounds."<sup>170</sup> However, the court noted that *Crawford* "is a reminder that even firmly established exceptions to the

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<sup>167</sup> *Id.*, 541 U.S. at 68.

<sup>168</sup> 182 N.J. 338 (2005)

<sup>169</sup> *State v. Branch, id.* at 368

<sup>170</sup> *Id.* at 370.

hearsay rule must bow to the right of confrontation.”<sup>171</sup> “Courts must be mindful, as well, of the requirements placed by *Crawford*...on the admission of testimonial evidence, whether in the context of the excited utterance exception or any other exception to the hearsay rule.”<sup>172</sup>

In *State v. Berezansky*,<sup>173</sup> the Appellate Division, relying on *Crawford*, held that a blood testing toxicology certificate could not be admitted into evidence in the absence of the technician who prepared it once the defendant has asserted his right to require the technician's testimony and availability for cross-examination. The Court held that the defendant's right of confrontation was violated by admission of a laboratory certificate, which clearly was hearsay, regardless of whether its preparer had complied with the statute or not, notwithstanding legislative allowance of affidavit based “proof” of a medically acceptable blood draw.<sup>174</sup> The court stated:

In the instant case, the preparation of the Uniform Certification for Bodily Specimens Taken in a Medically Acceptable Manner could not qualify for admission under the business record exception to the hearsay rule, *N.J.R.E.* 803(c)(6), because it was not prepared in the ordinary course of business. Instead, the certification was prepared solely to be used “in any proceeding as evidence of the statements contained” within such record. *N.J.S.A.* 2A:62A-11. As we observed in *Berezansky*, *supra*, the business records exception will not apply if the document was prepared specifically for the purposes of litigation.<sup>175</sup>

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<sup>171</sup> *Id.* at 369-70.

<sup>172</sup> *Id.* at 370-71.

<sup>173</sup> 386 *N.J.Super.* 84 (App.Div. 2006)

<sup>174</sup> See *N.J.S.* 2A:62A-10 and -11.

<sup>175</sup> *State v. Berezansky*, *supra*, 386 *N.J.Super.* at 94; see also *State v. Renshaw*, \_\_\_ *N.J.Super.* \_\_\_, 2007 WL 419621 (2007).

In *State v. Buda*,<sup>176</sup> the Appellate Division held that a statement given to a DYFS worker was testimonial -- the ongoing police emergency had ended and the primary purpose of the statement was to establish or prove past events potentially relevant to later criminal prosecution.<sup>177</sup>

With this in mind, the source codes and computer program of the Alcotest 7110 MKIII-C exist in this State at the request of the prosecuting authority. Without the computer code, the machine does not work. "[T]he Framers would be astounded to learn that *ex parte* testimony could be admitted against a criminal defendant because it was elicited" not "by 'neutral' government officers,"<sup>178</sup> but by a machine. They were keenly aware of the hazards presented by such practices, hazards that do "not evaporate when testimony happens to fall within some broad, modern hearsay exception."<sup>179</sup>

*Crawford* precludes admission into evidence any information produced by the machine without independent testing of the machine source code. The State has not demonstrated that the source code is unavailable. It is being held in secret by Draeger, claiming that it is proprietary. Constitutional rights are not proprietary.

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<sup>176</sup> 389 N.J.Super. 241 (App.Div. 2006).

<sup>177</sup> *State v. Buda*, *id.* at 249.

<sup>178</sup> *Crawford v. Washington*, *supra*, 541 U.S. at 66

<sup>179</sup> *Id.*, 541 U.S. at 56, n.7.

C.

WITHOUT DISCLOSURE, VERIFICATION, DATA COLLECTION, AND OTHER GUARANTEES OF SOFTWARE RELIABILITY, THE STATE DID NOT PROVE THAT THE ALCOTEST 7110 WAS SCIENTIFICALLY RELIABLE.

The Alcotest 7110 is a novel scientific device that detects alcohol. To be relevant, such evidence must be shown to be scientifically reliable.<sup>180</sup> The State has the burden of proving whether a particular technology -- here, a programmable software controlled device -- is generally accepted in the scientific community. "Proving general acceptance 'entails the strict application of the scientific method, which requires an extraordinarily high level of proof based on prolonged, controlled, consistent, and validated experience.'"<sup>181</sup> "[A] belief that the device is broadly accurate is not sufficient."<sup>182</sup> "[T]he responsibility for establishing all conditions as to the admissibility of [7110] results is properly allocated to the State."<sup>183</sup> The level of proof required is clear and convincing evidence -- *i.e.*, evidence that "'produce[s] in the mind of the trier of fact a firm belief or conviction as to the truth of the allegations sought to be established,' evidence 'so clear, direct and weighty and convincing as to enable [the factfinder] to come

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<sup>180</sup> See *Frye v. U.S.*, 293 F. 1013 (1923).

<sup>181</sup> *State v. Harvey*, 151 N.J. 117, 171 (1997), quoting *Rubanic v. Witco Chemical Corp.*, 125 N.J. 421, 436 (1991).

<sup>182</sup> *In re LTI Marksman 20-20 Laser Speed Detection System*, 314 N.J. Super. 211, 230 (Law Div. 1996) ["Laser I"].

<sup>183</sup> *Romano v. Kimmelman*, 96 N.J. 66, 91 (1984).

to a clear conviction, without hesitancy, of the precise facts in issue." <sup>184</sup>

Still, the State retains the burden of proving guilt to the *per se* violation beyond a reasonable doubt. "***The defendants***, of course, have an interest in this case, but they do not begin to have an economic stake which would justify the kind of expenditures which would be involved, and they ***do not have the resources of time, talent and personnel to conduct the testing***. There should be adequate performance testing, but it would not be reasonable to expect it to come from the defendants or from people broadly situated as they are." <sup>185</sup>

In the present case, the State, abetted by Draeger's stonewalling, failed to meet its burden.

#### I.

##### NO SOURCE CODE:

**The State Failed, and Draeger, as an Agent of the State, Refused to Disclose Source Code, Thereby Violating Court Orders and Defendants' Rights to Discovery and Due Process.**

**Not Reliable.** This statement is false: "The firmware currently in the Alcotest NJ Version 3.11, and any future modifications or upgrades of that present firmware, does not impact upon or affect the scientific reliability, accuracy or precision of the Alcotest evidential breath test instrument to detect, analyze and accurately report a breath alcohol

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<sup>184</sup> *In re Seaman*, 133 N.J. 67, 74 (1993) (citations omitted).

<sup>185</sup> *Laser I*, *supra* at 232 (emphasis added).

reading."<sup>186</sup> Verification of software is critical to determining reliability.<sup>187</sup> In this case, the facts are: No one knows if it is reliable. Draeger would not tell whether it was reliable. The State failed to prove it was reliable.

**Computers.** The Alcotest 7110 is a computer with a specific purpose.<sup>188</sup> Described as "an embedded system,"<sup>189</sup> it consists, *inter alia*, of a central processing unit (CPU), a Motorola M68HC11 processor<sup>190</sup> which does the actual computations, about 25 more integrated circuits (microchips),<sup>191</sup> memory (EEPROM), and some way of communicating or interfacing with the outside world.<sup>192</sup> Whether characterized as a computer or embedded system, the Alcotest 7110 contains hardware and software components.<sup>193</sup> Hardware components include a motherboard, optics, an infrared absorption cuvette, sampling system, flow and pressure sensors, keyboard, and printer.<sup>194</sup> Software components include machine language loaded into memory as firmware for the microprocessor and other electronic components, and to handle data retrieval, data communications, and operator input.<sup>195</sup> Absent software (firmware), the Alcotest 7110 can perform no function.<sup>196</sup>

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<sup>186</sup> SMR233(f).

<sup>187</sup> See SMR40.

<sup>188</sup> SMR197-98; see 16T71-16T72, 17T42.

<sup>189</sup> SMR198; 16T115, 17T40, 17T42.

<sup>190</sup> 18T27-28, D-42.

<sup>191</sup> 23T46-47.

<sup>192</sup> SMR197-98; 16T79, 17T40.

<sup>193</sup> SMR198, 17T43.

<sup>194</sup> SMR198; 17T43-46, 17T55-56, 17T58; C-14, Seidman report at 1.

<sup>195</sup> SMR198, 18T54.

<sup>196</sup> 23T66.

**Source Code** is a form of software that consists of computer language readable by a person with appropriate expertise and includes a list of steps for implementing the algorithms.<sup>197</sup> Software code is "human-friendly" language which is put through a software program called a compiler to generate machine executable code, also called machine language.<sup>198</sup> There are multiple languages of source code ranging from English (Cobol) to mathematical expressions (C or C++), each with its own syntax.<sup>199</sup> Firmware consists of easily accessible software loaded into the embedded system's memory so that it can quickly execute the signal processing algorithms specified by the system's designer.<sup>200</sup> Algorithms are the building blocks or formula for creating the software's intended results.<sup>201</sup>

**Software Development.** To determine if firmware correctly implements the algorithms, a designer should adhere to industry standards for software development by: (1) determining the requirements based upon the customer's needs; (2) designing software architecture; (3) constructing the code; (4) testing the system containing the software; (5) obtaining the customer's acceptance; and (6) performing any necessary maintenance.<sup>202</sup> The

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<sup>197</sup> SMR202, 17T98.

<sup>198</sup> SMR192, 30T69-70.

<sup>199</sup> SMR192, 30T69-70.

<sup>200</sup> SMR198-99; 16T108-09, 17T70; C-14, Seidman report at 3.

<sup>201</sup> SMR199; 17T97, 18T53.

<sup>202</sup> SMR199; 16T75-77, 17T28.

same steps should be followed for development of a system such as the Alcotest 7110.<sup>203</sup>

**Software Validation.** Software also may be most reliably validated and verified by an external audit team.<sup>204</sup> External audits seek to (1) verify that the tests performed can be traced to the design requirements, and (2) validate that the software satisfies its intended use.<sup>205</sup> Confidence in the Alcotest 7110 would be higher if Draeger had obtained independent testing and evaluation of the Alcotest 7110's software.<sup>206</sup> Indeed, without independent source code verification, no one can have confidence in this system.

**Software as Proprietary.** Computer applications using source codes are considered proprietary because they cost a lot to develop,<sup>207</sup> but obviously must meet the appropriate legal criteria to receive intellectual property protection. Software companies generally are reluctant to release these codes given the competitiveness of the industry.<sup>208</sup> But on at least two occasions, a manufacturer did provide court-ordered copies of Datamaster's source codes to Washington's defense bar and, over the years, provided the algorithms used to calculate various aspects of the test results.<sup>209</sup> A manufacturer may want to review the source code to ensure that programmers followed the correct

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<sup>203</sup> SMR199; 16T75; C-14, Seidman report at 4).

<sup>204</sup> SMR200, 16T101.

<sup>205</sup> SMR200; 16T102; C-14, Seidman report at 6.

<sup>206</sup> SMR200; 18T15, 18T23.

<sup>207</sup> SMR192, 30T78.

<sup>208</sup> SMR201, 16T103-04.

standards.<sup>210</sup> Source code review may be warranted when there are performance issues (such as slow responses or the persistence of overly high utilization), integration complexities in getting several systems to interface with each other, or inaccurate results.<sup>211</sup> The manufacturer could ask the programmer who wrote the code to look at it, could ask an independent programming team from another department to look at it (sometimes called "walk-throughs"), or could meet the highest level of scrutiny by using an independent outside agency.<sup>212</sup>

**Source Code Review.** Source code review is a time-consuming process, especially if the review is undertaken to "debug" a system,<sup>213</sup> and can be confusing especially where a programmer, in dealing with the hardware, has to change the code to respond to predictable results.<sup>214</sup> Errors in coding are rampant, and for that reason, many systems have self-checking capabilities.<sup>215</sup> An embedded (or targeted) system like the Alcotest 7110 has a sole purpose and operates by running a reduced logic code (machine language) which is sufficient to support what it has to do and has fairly limited interface sensors.<sup>216</sup>

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<sup>209</sup> SMR169; 5T25, 6T57.

<sup>210</sup> SMR192, 30T73.

<sup>211</sup> SMR192; 31T22; C-13, Dee report at 5.

<sup>212</sup> SMR193, 31T21-22.

<sup>213</sup> SMR193, 30T82-83.

<sup>214</sup> SMR193, 30T137-38.

<sup>215</sup> SMR194, 30T83-84.

<sup>216</sup> SMR194; 30T62-64, 32T71.

## II.

### NO SOFTWARE VERIFICATION:

**The Failure to Either Disclose or Adequately Verify the Functioning of Firmware Rendered the Alcotest 7110 Scientifically Unreliable. After Initial Verification and "Locking," Future Revisions Would Require Similar Verification.**

The Alcotest 7110 relies on source codes which consist of its own language with syntax, specially named routines, and formatting conventions.<sup>217</sup> An examination of the source codes would reveal if firmware was properly implementing the intended algorithms and computations, and if data communication, retrieval and input software was subject to malicious manipulation.<sup>218</sup>

Gullberg knew nothing about technical details of Alcotest firmware.<sup>219</sup> Nonetheless, before the purchase of new breath-testing instruments, he recommended that software be checked for reasonable integrity by an independent laboratory,<sup>220</sup> since the algorithms are another source of source code inaccuracy.<sup>221</sup> This opinion was based in large part on his personal experience with the Datamaster. Since the Datamaster's introduction in Washington, it had undergone several changes in software and hardware.<sup>222</sup> To check the instrument's measurement system for possible errors, Gullberg and others studied information sent to a central computer, reviewed reports from officers in the field indicating possible errors, and performed experimental tests in

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<sup>217</sup> SMR40, see SMR64.

<sup>218</sup> SMR44.

<sup>219</sup> SMR150, 13T8.

<sup>220</sup> SMR150; 13T52-54; D-16.

<sup>221</sup> 10T68.

<sup>222</sup> SMR151; 13T29, 13T32.

the laboratory on human subjects to explain invalid samples such as the misidentification of mouth alcohol.<sup>223</sup> The Datamaster's manufacturer also provided details of its algorithm and, on request, has provided others with source codes under protective order.<sup>224</sup> Alcotest software and firmware, which is integral to all functions, would be presumed reliable in our courts, but only if Draeger follows the terms expressed in the Sachs' protocol.<sup>225</sup>

The Special Master's first conclusion -- "the instrument acceptable for evidential breath tests in New Jersey, when accompanied by appropriate foundational proofs<sup>226</sup> depends on an initial verification which was never done for firmware version 3.11. Draeger's agreement to undertake such verification in the future says nothing about present reliability, the Special Master's conclusions notwithstanding."<sup>227</sup>

Ironically, while Judge King saw "no hint of source code problems or failure throughout this litigation,"<sup>228</sup> he recounted several throughout his report from the testimony of witnesses he found credible. For example:

- Despite programming for a two-minute lockout between breath samples, Flanagan and Brettell became aware that the instrument was not adhering to the two-minute lockout all the time.<sup>229</sup> This, of course, begs the question, How can results be valid without a two-minute lockout under the State's program?

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<sup>223</sup> SMR151; 13T26, 13T29-31.

<sup>224</sup> SMR151; 8T110-11, 13T36-38.

<sup>225</sup> SMR236.

<sup>226</sup> SMR230.

<sup>227</sup> SMR241.

<sup>228</sup> SMR45.

<sup>229</sup> SMR87, 116; 33T119-20, 51T73, 53T53, 59T64.

- ☑ Some of the alleged errors involved decimal place issues. For example, two AIRs properly reported control test failures even though the test results at three decimal places.<sup>230</sup>
- ☑ In two cases, the readings fell outside of control test tolerances and should have been flagged as control test failures.<sup>231</sup>
- ☑ New Brunswick also returned an instrument because an error message showed its memory was exceeding capacity, despite the practice of downloading data to coordinator laptops every 500 test sessions or so.<sup>232</sup>
- ☑ Core software in Alabama's instrument had been changed for breath temperature sensing and fuel cell fatigue.<sup>233</sup>
- ☑ Draeger must update firmware in 2007 to make its instruments compliant with a new daylight savings time structure.<sup>234</sup>
- ☑ The Alcotest 7110 permitted black-key access to the number of decimal places to which results were reported, when this should not have occurred.<sup>235</sup>
- ☑ The decision in *State v. Foley*<sup>236</sup> raised a few concerns and issues.<sup>237</sup>
- ☑ An instrument would not allow an officer to enter the correct date and time of arrest, and he had to intentionally entered the wrong date.<sup>238</sup>

All requests for software changes -- scientific and administrative -- required Dr. Brettell's approval,<sup>239</sup> and

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<sup>230</sup> SMR88-89; 51T68-69; D-138; D-139.

<sup>231</sup> SMR121, 53T30-31.

<sup>232</sup> SMR63, 20T17-18, S-35; see SMR104; see also 22T18-21 (This could have been a software error).

<sup>233</sup> SMR63; 25T17-18, 49T119, 61T66-68.

<sup>234</sup> SMR64; 20T33, 25T41-42.

<sup>235</sup> 33T92, see SMR79.

<sup>236</sup> 370 N.J. Super. 341 (Law Div. 2003).

<sup>237</sup> 33T64, see SMR79.

<sup>238</sup> SMR128, 54T51.

Brettell, not the ADTU, tested the firmware.<sup>240</sup> But Dr. Brettell, the State's point man on Alcotest 7110 selection, did not perform additional testing and validation because, in his ignorance, he believed these changes did not affect the analytical operation.<sup>241</sup> "I'm not a computer expert and I haven't looked at the source code, so that's out of my realm of expertise," he declared.<sup>242</sup>

Furthermore, Brettell never asked Draeger for Alcotest 7110 source codes.<sup>243</sup> He once asked Draeger for tolerance algorithms, but only got a description of them in response.<sup>244</sup> Although Judge King says "Flanagan verified" changes,<sup>245</sup> this, too, is not true, since neither of these credible witnesses had the expertise or competence to testify about any protocol they adhere to in verifying source code.

Another misleading characterization is the assertion that the Alcotest 7110 uses newer technology and is more transparent because it produces a printout.<sup>246</sup> Without source code disclosure, the Alcohol Influence Report is just camouflage for an unknown methodology.

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<sup>239</sup> 43T88-89.

<sup>240</sup> 43T117.

<sup>241</sup> SMR30.

<sup>242</sup> 37T168-69, *see* 37T156.

<sup>243</sup> SMR97, 34T12.

<sup>244</sup> SMR97, 47T63; *see also* SMR83 crediting Brettell with incompetent software verification.

<sup>245</sup> SMR30.

<sup>246</sup> SMR108, 57T23-24.

### III.

#### DATA COLLECTION:

#### The State Must Implement Data Collection for Discovery and Periodic Review of Data for Reliability

Currently, coordinators download electronic files onto a laptop and transfer the data to two non-rewriteable CDs: one for the local police department and another logged into evidence.<sup>247</sup> This is done when an Alcotest is taken out-of-service and returned to Durango for inspection and repair,<sup>248</sup> and when an instrument has performed 500 tests, a New Jersey policy adopted to avoid the instrument's tendency to slow down as it searches large numbers of files.<sup>249</sup> After downloading, all information in the Alcotest 7110 is removed, but sequential file numbering continues.<sup>250</sup> Although the Alcotest 7110 can communicate via modem over standard telephone lines with a central computer, this is not done presently.<sup>251</sup> Prompt implementation will allow daily or weekly uploads of all data from each Alcotest 7110 in the State automatically<sup>252</sup> and enhance confidence in field instruments.<sup>253</sup> Data collection and analysis is essential for assuring Alcotest 7110 reliability.<sup>254</sup>

One could view the centralized data with a compatible data base program, help assure quality control, and alert the State

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<sup>247</sup> SMR104; 52T119, 54T34-36.

<sup>248</sup> SMR104, 52T117.

<sup>249</sup> SMR104, 54T34-35.

<sup>250</sup> SMR104, 54T36.

<sup>251</sup> SMR247; *see* SMR104, 179.

<sup>252</sup> SMR247, *see* SMR43.

<sup>253</sup> SMR179, 15T15.

<sup>254</sup> 31T34, *see* 13T30.

Police to problems arising in the field.<sup>255</sup> Data also helps diagnose potential problems. For example, as fuel cells wear down over time, they respond more slowly and may become contaminated, and their performance can be assessed over time.<sup>256</sup> Judge King "strongly recommends that the State obtain and deploy a software program to create and maintain a centralized data base of digital information stored by all Alcotest 7110s throughout the State,"<sup>257</sup> so that, among other things, "discovery data, the collected centralized historical data [can] be provided for any Alcotest 7110 relevant to a particular defendant's case in a digital format readable in Microsoft Access or similar program generally available to consumers in the open market," subject only to certain privacy concerns.<sup>258</sup> Indeed, the State intends to implement data collection and access.<sup>259</sup>

#### IV.

##### **FIRMWARE LOCKING:**

##### **Requiring the Reporting of Any and All Modifications to the Firmware on the Alcohol Influence Report Is Essential to Assuring Reliability.**

Firmware constantly changes, and revisions can be initiated by the customer or manufacturer if laws or regulations or

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<sup>255</sup> SMR247, see SMR66.

<sup>256</sup> SMR164, 5T84-85.

<sup>257</sup> SMR247-48, see SMR98.

<sup>258</sup> SMR234(h).

<sup>259</sup> SMR247.

tolerances change.<sup>260</sup> For example, since 1998, Draeger has made 27 revisions to Alabama's Alcotest 7110 firmware.<sup>261</sup>

Firmware must be "locked" -- meaning that if anyone modified the software, it would be reported as modified on the Alcohol Influence Report.<sup>262</sup> The public should receive some form of notice of future firmware changes.<sup>263</sup>

**D.**

**PHYSIOLOGY DOES MATTER:**

**PHYSIOLOGICAL AND BIOLOGICAL FACTORS AFFECT BOTH THE WEIGHT TO BE GIVEN ALCOTEST RESULTS AND, IN CASES WHERE THE RELIABILITY OF THE SAMPLE ITSELF IS COMPROMISED, ADMISSIBILITY.**

**I.**

**PARTITION RATIO:**

**While Breath Alcohol Content Is Generally Less Than Blood Alcohol Content, the Assumed Partition Ratio of 2100 Varies From Person to Person and in the Same Person From Time to Time, Raising a Question of Evidential Weight. Indeed, Breath Alcohol Content Is Generally Higher than Blood Alcohol Content Because Partition Ratio Is Much Lower, Never Stabilizes, and Varies Continuously in Every Person until Ethanol Is Completely Absorbed.**

Putting aside issues involving software verification, there remains the significant problem converting that breath-alcohol reading or concentration (BrAC) into a blood alcohol concentration (BAC).<sup>264</sup> There is debate in the breath-testing community about the use of a constant blood-to-breath partition

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<sup>260</sup> SMR64; 20T33, 49T81-82.

<sup>261</sup> SMR64; 25T12, 25T15, 25T29-30; D-100.

<sup>262</sup> SMR129, see also SMR232(c).

<sup>263</sup> SMR129-30; 60T25-26, 60T86-87.

ratio for all subjects.<sup>265</sup> Many different variables, physiological and environmental, influence the concentration of alcohol in breath verses blood in the lungs.<sup>266</sup> The magnitude of variation of the ratio between subjects, and from time-to-time within the same subject, was important to document whenever blood alcohol concentration was estimated indirectly by analyzing breath.<sup>267</sup> Any quantitative measurement has some inherent error given the range of human biological variability.<sup>268</sup>

There are three phases of alcohol metabolization: absorptive, peak, and post-absorptive (a.k.a. elimination).<sup>269</sup> During the absorptive phase, the body absorbs alcohol faster than it eliminates.<sup>270</sup> The actual rate of absorption, however, varies in the same subject from time to time and under similar conditions depending upon various biological factors, such as the amount of food in the stomach.<sup>271</sup> During this phase, the concentration of alcohol in arterial blood is higher than that of venous blood.<sup>272</sup> In the peak phase, alcohol concentration reaches its highest level and exists at a plateau where absorption and elimination occur at the same rate, in equilibrium.<sup>273</sup> Then

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<sup>264</sup> SMR21-22.

<sup>265</sup> SMR175, 14T84.

<sup>266</sup> SMR162; 4T57-58, 6T20.

<sup>267</sup> SMR175, 14T84, D-19 at 920. See A.W. Jones, "Variability of the Blood/Breath Alcohol Ratio in Drinking Driver," 41 *J. Forensic Science* 916, 920 (1996).

<sup>268</sup> SMR165, 5T16-5T17.

<sup>269</sup> See SMR184; 26T100, 27T10.

<sup>270</sup> SMR184, 27T111.

<sup>271</sup> SMR184, 27T13.

<sup>272</sup> SMR184, 28T104.

<sup>273</sup> SMR185, 27T11.

subjects enter the post-absorptive phase when their bodies begin eliminating alcohol faster than absorbing it; this is when a more realistic estimate of a blood-to-breath comparison is made.<sup>274</sup> During post-absorption, alcohol concentration in venous blood (used for drunk-driving cases) is higher than arterial blood (usually used only for forensic research purposes).<sup>275</sup>

A forensic blood test is always more accurate than a breath test for determining blood alcohol content.<sup>276</sup> In the words of Kurt Dubowski in a treatise which Judge King considered "very helpful"<sup>277</sup>:

Although there is good statistical correlation between the alcohol concentration of different body tissues and fluids in the fully postabsorptive state has been reached at any given time, wide individual variations from the population mean partition values exist. It is often impossible to determine whether the postabsorptive state has been reached at any given time. Those factors make it impossible or infeasible to convert the alcohol concentration of breath or urine to the simultaneous blood alcohol concentration with forensically acceptable certainty, especially under per se or absolute alcohol concentration laws.<sup>278</sup>

While the Alcotest 7110 assumes a partition ratio of 2100, the ratio differed between individuals and for the same individual from time-to-time based upon changing physiological conditions.<sup>279</sup> The blood-breath ratio was not the same for every individual, was not constant within an individual, and tended

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<sup>274</sup> SMR185; 26T102, 27T11-12.

<sup>275</sup> SMR186, 28T104-05.

<sup>276</sup> 44T75.

<sup>277</sup> SMR256.

<sup>278</sup> Dubowski, Kurt M., "Absorption, Distribution and Elimination of Alcohol: Highway Safety Aspects," 10 *J. Studies on Alcohol* 98 (Supp. July 1985); D-235.

upwards over the course of an exhalation as alcohol was eliminated.<sup>280</sup> While researchers generally agree there is a range of blood-breath ratios for the population at large, they disagree about the limits or extremes.<sup>281</sup> A.W. Jones and others, in a treatise published September 13, 2006, reported that the venous blood / breath ratio never stabilized, and the ratio varied between 1834 and 3259.<sup>282</sup> Given the range of extant calculated partition ratios, statistician Gullberg recommended that drunk-driving statutes avoid the blood-to-breath comparison by adopting a breath alcohol standard and if not, that courts give greater weight to the clinical picture at and after a subject's arrest along with the surrounding circumstances.<sup>283</sup> In some cases, Gullberg recognized that the 2100:1 partition ratio resulted in readings on the high side.<sup>284</sup> Furthermore, while sampling is precise in blood, it is not so precise in breath.<sup>285</sup>

Like the 2100 partition ratio, any breath testing program must make certain assumptions to be generally, although not conclusively, probative of blood alcohol content. One unjustifiable assumption is that, when tested, most subjects

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<sup>279</sup> SMR57-58, 162, 4T58, 21T70-71, .

<sup>280</sup> SMR144; 8T21-23, 8T25-26.

<sup>281</sup> SMR162, 6T120.

<sup>282</sup> 10T94-97; *D-18*; Lindberg, L., S.Brauer, P.Wollmer, L.Goldberg, A.W. Jones, S.G. Olssen, "Breath alcohol concentration determined with a new analyzer using free exhalation predicts almost precisely the arterial blood alcohol concentration," *Forensic Sci. Int'l* (Sept. 13, 2006).

<sup>283</sup> SMR144, 8T11-12.

<sup>284</sup> SMR145, 8T18.

<sup>285</sup> 8T62; see SMKR145, 8T61.

would be in the post-absorptive phase.<sup>286</sup> Brettell was aware that certain studies by Gullberg and A.W. Jones suggested ratios during absorption as low as 1500:1 and 1700:1, respectively.<sup>287</sup>

Judge King seems to have accepted the old paradigm that the amount of alcohol in alveolar breath reflects blood alcohol content.<sup>288</sup> He also recognized the emergence of the alternative theory that alcohol introduced into breath testing devices originated from interaction with the mucosa in the airways.<sup>289</sup> Indeed, interaction of alcohol with the airways was one factor explaining why breath alcohol concentration could vary.<sup>290</sup>

The State has established minimum criteria for an acceptable breath sample -- *i.e.*: a 1.5 liter minimum volume, a 4.5 second minimum blowing time, a 2.5 liters per minute minimum flow rate, and an equilibrium determined by an IR measure of ethanol within no more than a one percent slope over .25 seconds.<sup>291</sup> This Court should follow Judge King's recommendation "that the Alcotest 7110 can be programmed to set a minimum of 1.2 liters for women over age sixty"<sup>292</sup> insofar as it accommodates a significant identifiable class of defendants adversely affected by current perimeters.

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<sup>286</sup> SMR97, 40T36-37.

<sup>287</sup> SMR97, 39T103.

<sup>288</sup> SMR20-21, 81, 96, 140-41; 11T90-91, 39T66, 39T69. *See* SMR37, 60, 91, 111; 19T191, 35T100-01, 52T76-77.

<sup>289</sup> SMR141-42, 206; *see* 39T74-75, 39T79, 62T45-46, 64T48; *see also* SMR217-18, 66T16-18, 66T63-64.

<sup>290</sup> SMR142, 12T46.

<sup>291</sup> SMR245; *see* SMR, 37-38, 60.

<sup>292</sup> SMR246; *see* SMR98; *see also* SMR147, 10T34.

Breath alcohol concentration never completely reaches a plateau but continues to increase as long as a person exhales.<sup>293</sup> A test result might be affected by how a subject blows into an instrument.<sup>294</sup> A long, full exhalation of deep lung air produces a higher breath alcohol concentration.<sup>295</sup> Likewise, a subject who holds her breath will potentially have a higher test result.<sup>296</sup> On the other hand, a test result will be lower if a subject breathes shallowly or hyperventilates.<sup>297</sup>

As Judge King acknowledges, the "old adage" is true: "The longer you blow, the higher you go."<sup>298</sup> The defense suggestion to set minimum and maximum breath volumes is an attempt to ensure fairness from one subject to the next. In *State v. Foley*, Kurt Dubowski suggested a minimum volume of 1.0 liters. In Alabama, the minimum volume is 1.3 liters. Most states using the Intoxilyzer use 1.1 liters. No reason, other than an arbitrary decision without any controlled experimental basis supports New Jersey's 1.5 liters.

Judge King found no reason in the evidence to doubt the continuing validity of the underlying theory of a 2100:1 blood-breath ratio.<sup>299</sup> While Judge King did find testimony by Drs. Simpson and Hlastala interesting, revealing "the next frontier in

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<sup>293</sup> SMR161, 6T42.

<sup>294</sup> SMR177, 14T26.

<sup>295</sup> SMR177, 14T27, 14T108-09.

<sup>296</sup> SMR177, 14T28; see SMR215, 65T40-43.

<sup>297</sup> SMR177, 14T28; SMR215, 65T41-43.

<sup>298</sup> SMR246, see SMR91. See also Gullberg's case study at SMR142-43, 8T7-9.

<sup>299</sup> SMR230-31.

the forensic science of evidential breath testing,"<sup>300</sup> that testimony clearly suggests that the 2100 monolith is cracking.

## II.

### DISEASES AND DIETS:

**In Some Cases Where Defendant's Have Physiological Conditions that May Contaminate or Compromise the Breath Sample, Breath Test Results Should Be Inadmissible.**

Generally, the Alcotest 7110's dual system of IR and EC technologies are capable of detecting interferents introduced into a subject's breath, because certain interferents, such as acetone and acetaldehyde, would not be detected in healthy individuals to any measurable degree.<sup>301</sup> For a few substances, though, EC and IR will detect interferents in similar ways.<sup>302</sup>

Mouth alcohol can cause contamination, and breath testers have developed various techniques to detect it. Although slope detectors are often touted as guards against mouth alcohol, they can be "fooled" by someone who has consumed alcohol.<sup>303</sup> According to Dr. Michael Hlastala,

The simple explanation is that the decreasing slope for alcohol coming from the mouth offsets the rising (positive slope) on alcohol exhaled from the lungs. Since a negative slope is not detected, the slope detector will not identify mouth alcohol under this situation. While the slope detector is an important check against mouth alcohol, it does not work well when alcohol is also present in the body. [SMR219; C-15, Hlastala report at 3.]

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<sup>300</sup> SMR231.

<sup>301</sup> SMR177-78; 14T11-12, 14T53-54.

<sup>302</sup> 26T124-25, see 188.

<sup>303</sup> SMR148, 12T80; see SMR168, SMR186, 4T104-05, 27T96-97; see also SMR219, 65T85-88, 65T91-92.

By far, the most effective safeguards against mouth alcohol contamination are the 20-minute pretest observation period, and, to a lesser extent, the two-minute lockout between samples.

Still, some people may have physiological conditions that can impede their ability to metabolize food causing very high levels of endogenous or naturally occurring interferents such as acetone, acetaldehyde, and ketones.<sup>304</sup> In particular, diabetics and people on special diets can have those substances present in sufficient concentrations to generate spectra in the presence of IR light.<sup>305</sup> To detect their presence, the Intoxilyzer 5000EN used five points on the spectrogram -- unlike the one point used in New Jersey -- to test for five major interferents including, but not limited to, acetone, acetaldehyde, and ethyl methyl ketone.<sup>306</sup> The more points of identification the greater the likelihood that interfering substances will be detected.<sup>307</sup>

Like diabetes and certain diets, another condition -- gastro-esophageal reflux disease ["GERD"] -- can affect breath samples. While the combination of a slope detector, two-minute lockout, and 20-minute observation period helps detect contamination, it is still difficult to detect internal regurgitation or GERD.<sup>308</sup>

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<sup>304</sup> SMR178; 14T61-62, 14T65-66.

<sup>305</sup> SMR178, 14T62.

<sup>306</sup> SMR178, 14T57-58.

<sup>307</sup> SMR178, 14T58.

<sup>308</sup> SMR220, 65T94-95.

III.

DOUBLING TOLERANCES:

**The Arbitrary Doubling of the Agreement Between Breath Test Results Defeated the Purpose of Duplicate Testing, Rendering the Alcotest 7110 Scientifically Unreliable.**

Tolerance is intended to detect interference and show that the separate IR and EC systems, which have been separately calibrated, are capable of making the same measurement on the same sample, thereby showing some analytical reproducibility.<sup>309</sup> If the two samples are not within the tolerance range a third test is forced to determine if the tolerance can be met and the tests are reliable.<sup>310</sup> If the permitted tolerance is too wide, the instrument is unreliable.<sup>311</sup>

There has been considerable confusion and dispute over the appropriate allowable tolerances between the two breath samples.<sup>312</sup> Manuals misstated it at least twice, and misprinted manuals were never corrected.<sup>313</sup> Over at least ten months, no effort was made to notify previously trained operators, defendants, or courts.<sup>314</sup>

In *Foley*,<sup>315</sup> the judge inadvertently doubled the overall range to 20 percent stating that the results had to be within .01 or plus or minus 10 percent of the average of the highest and

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<sup>309</sup> 4T97.

<sup>310</sup> SMR250.

<sup>311</sup> 43T18-19.

<sup>312</sup> SMR250; *see, e.g.*, SMR187, 26T118.

<sup>313</sup> SMR129, 57T96-97, 60T16; *see* SMR166, 7T18, 7T53.

<sup>314</sup> 57T95-97.

<sup>315</sup> 370 *N.J.Super.* at 355-57.

lowest IR and EC values, whichever was greater.<sup>316</sup> Brettell then doubled the allowable tolerance between readings from NJ3.8 (10%) to NJ 3.11 (20%)<sup>317</sup> without admitting it to anyone outside of his office until his cross examination in this case.<sup>318</sup> While there were certain inconsistencies throughout Brettell's testimony with respect to his expression of the standard, he actually set the acceptable tolerance as plus or minus .01 or plus or minus 10 percent of the mean of the four readings, whichever is greater.<sup>319</sup>

He wrote a certification to support reliability prior to the present hearings and did not disclose his doubling of the tolerance.<sup>320</sup> How would any Court apply the standard if it didn't know what it was?<sup>321</sup> No defendant could properly assess his or her case without this information.

Brettell doubled the tolerance from NJ 3.8 to reduce the number of subjects who had to blow third tests, an issue raised in *Foley*.<sup>322</sup> Third tests due to exceeding tolerance occurred with nine of 372 subjects for firmware version 3.8 and did not occur at all with the 1,862 subjects for version 3.11.<sup>323</sup> He thus defeated the "best scientific practice" of duplicate testing.<sup>324</sup> Brettell now recommends tightening up the tolerances and favored

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<sup>316</sup> SMR85; 35T35-36, 43T27-28; see SMR251.

<sup>317</sup> SMR251, see SMR85.

<sup>318</sup> See 43T109-10.

<sup>319</sup> SMR85; 34T78, 36T26, 37T14548, 37T214; see SMR251.

<sup>320</sup> 35T42.

<sup>321</sup> 36T30-31, 55T39-40.

<sup>322</sup> SMR85; 35T13-15, 43T31, 51T62-63.

<sup>323</sup> SMR90; 34T40-41, 35T18. The only third test with version 3.11 was attributed to sucking. 35T27-29.

<sup>324</sup> See SMR166, 4T96.

using a hybrid such as .01 or plus or minus five percent, whichever is greater.<sup>325</sup>

Gullberg thought that New Jersey's tolerances were too imprecise, noting that New Jersey's tolerance of plus or minus 10 percent was "rather broad."<sup>326</sup> He preferred a plus or minus five percent standard which would have a greater power to detect errors.<sup>327</sup> "The *Downie* tolerance standard was .01 but this was enlarged [in firmware version 3.8] to .01 or 10% of the difference between the highest and lowest of the four readings (two EC and two IR), whichever is greater," SMR250-51, then doubled by Brettell.

Judge King's recommendation of "a tolerance of plus or minus .005 or plus or minus 5% (10% overall) of the mean of the four readings (two EC and two IR) whichever is greater,"<sup>328</sup> approaches existing standards in New Jersey. But his ultimate conclusion concerning tolerances and agreement between results is simply unfair and clearly unwarranted. He found, "Use of the earlier formulas does not invalidate the test results rendered in those cases. They were not improper and inadmissible, but our recent recommendation is simply a better, tighter range for precision and accuracy."<sup>329</sup> Our cases have consistently held that

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<sup>325</sup> SMR99.

<sup>326</sup> SMR146; 8T66-67, 8T66.

<sup>327</sup> SMR146; 10T90, 12T15.

<sup>328</sup> SMR251, *see* SMR121.

<sup>329</sup> SMR252.

there must be two results within .01 of each other. See, e.g., *State v. Downie*<sup>330</sup> and *Romano v. Kimmelman*.<sup>331</sup>

In *State v. Downie*,<sup>332</sup> this Court agreed, *inter alia*, that Breathalyzer results are accurate "so long as two breath readings are taken within fifteen minutes of each other, do not differ by more than .01%, and the lower of the two is used for proof purposes."<sup>333</sup> In *Romano v. Kimmelman*, this Court required two conditions of admissibility: The first condition involves the two-test procedure and that the two tests or readings are within a tolerance of 0.01 percent of each other.<sup>334</sup>

No reason other than Brettell's unsanctioned, obscured, and arbitrary capitalization of Judge Orlando's error in the *Foley* opinion explains the current unacceptable agreement tolerance.

This narrowing of tolerances must be evenly applied. Readings in prosecutions under NJ3.11 must undergo sufficient analysis to ensure that the readings do not violate the .01 or 5% of the mean analysis. This may impact a relatively small number of cases under NJ3.11.

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<sup>330</sup> 117 N.J. 450 (1990).

<sup>331</sup> 96 N.J. 66 (1984).

<sup>332</sup> *State v. Downie*, *supra* at 455.

<sup>333</sup> *State v. Downie*, *supra* at 455.

<sup>334</sup> 96 N.J. at 87-88 (1984).

IV.

**BREATH TEMPERATURE:**

**Accounting for Breath Temperature Enhances the Reliability of Alcotest Results.**

The defense agrees with Judge King's strong recommendation that New Jersey use Draeger's breath temperature sensor.<sup>335</sup>

Ryser and Draeger agree that end-expiratory breath temperature for the average person is about 35 degrees Celsius.<sup>336</sup>

As the temperature rises, more alcohol molecules will emerge into the vapor.<sup>337</sup> An elevated body temperature theoretically would drive more alcohol off the lungs and into the breath than in the bloodstream.<sup>338</sup> For example, in New Jersey the Alcotest 7110 is set to read an alcohol concentration at 34 degrees C so when the temperature rises, the calculation is thrown off.<sup>339</sup> An Alabama study of about 12,000 subjects who used the Alcotest 7110 showed that the average breath temperature was 34.9 degrees C, not the historically accepted 34 degrees C, and concluded that there should be a downward adjustment of 6.8 percent for every increase of one degree.<sup>340</sup> Colorado addressed the temperature issue by including a question on its alcohol influence reports asking if the subject was ill, thereby allowing the person to argue in court that she had a temperature which might have affected the reading.<sup>341</sup> Gullberg stated that keeping

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<sup>335</sup> SMR250.

<sup>336</sup> 61T46; AB-2, D-223.

<sup>337</sup> SMR141; 10T126, 11T96, 61T46; AB-2, D-20, D-223.

<sup>338</sup> SMR176, 14T20-21; see SMR215-16, 65T55-56, 65T69.

<sup>339</sup> SMR176; 14T21, 14T26.

<sup>340</sup> SMR176, 14T24-26.

<sup>341</sup> SMR176-77, 14T7.

one's mouth closed for five minutes before submitting a breath sample, the machine will read a higher ethanol concentration.<sup>342</sup>

Judge King decided that, unless breath temperature sensing is implemented, all breath test results should be reduced downward by 6.58 percent, as done currently in Alabama.<sup>343</sup> This will serve to reduce the overall margin of error from the Alcotest 7110 and increase confidence in the reported BAC as more accurate to support a finding of guilt.<sup>344</sup> This is a biological variable which can and should be controlled.<sup>345</sup>

**E.**

**PROGRAM SAFEGUARDS MUST BE STRICTLY FOLLOWED AND ENFORCED TO ASSURE ALCOTEST RELIABILITY.**

**I.**

**OPERATOR ERROR:**

**The Alcotest 7110 Is Still Subject to Operator Error in the Areas of Data Entry, Blowing Instructions, Mouthpiece Changes, and Refusal Determinations.**

Alcotest operators enter test data as part of test administration.<sup>346</sup> An operator can intentionally enter wrong information,<sup>347</sup> and bypass the 20-minute waiting period.<sup>348</sup>

Operators are trained to encourage subjects to blow up to 3.0 liters (or until twenty asterisks appear on the screen) in

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<sup>342</sup> 10T129-30.

<sup>343</sup> SMR250, see SMR77.

<sup>344</sup> SMR250.

<sup>345</sup> SMR250.

<sup>346</sup> See SMR110, SMR114, 52T65.

<sup>347</sup> see SMR128-29, 54T51, 54T63-65, D-142.

<sup>348</sup> See, e.g., SMR128, 54T52-58, 54T67, D-134, D-135.

order to ensure that the subject has reached deep lung air.<sup>349</sup> But the ultimate acceptance depends on either computer programming or operator discretion.<sup>350</sup> Certain Alcohol Reports provided examples of operators who failed to reset the instrument before inputting; made transcriptional errors such as entering the wrong date, year or time; incorrectly hit the "Y" key when reviewing data; or failed to follow the twenty-minute observation period.<sup>351</sup> The Alcotest may also be subject to coordinator error on solution changes when entering the number of days since the last solution change.<sup>352</sup>

Operators are also trained to change the mouthpiece after each breath sample and read specific blowing instructions to the subject.<sup>353</sup> Operators coach the subject through the blowing process.<sup>354</sup> The State Police do not videotape subjects on the Alcotest 7110.<sup>355</sup> Also, portable radios and cell phones should be kept out of the room during breath testing.<sup>356</sup>

After the operator performs the initial data entry, the LED screen displays a message to "please blow/R."<sup>357</sup> The operator has three minutes to read the blowing instructions, insert the mouthpiece, and collect a breath sample or the instrument will

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<sup>349</sup> SMR42.

<sup>350</sup> See 54T100.

<sup>351</sup> SMR88, see SMR110; 33T125, 37T17-18, 37T22-24, 51T65-67; D-131, D-132, D-134, D-135.

<sup>352</sup> SMR109, 60T20-21.

<sup>353</sup> SMR111; 52T70, 52T80.

<sup>354</sup> SMR111, 52T78.

<sup>355</sup> SMR111, 57T53.

<sup>356</sup> SMR111; 52T95, 54T102, 58T62-63.

<sup>357</sup> SMR114, 52T72.

display the error message "ready to blow expired."<sup>358</sup> If the error message appears, the operator must select one of three prompts: (1) terminate; (2) refused; or (3) continue; when an operator pushes button three, the instrument purges itself and again prompts "please blow/R" and the process repeats.<sup>359</sup> The Alcotest 7110 allows the operator 11 attempts at collecting two valid breath samples.<sup>360</sup> After the eleventh attempt, the instrument gives only two options: (1) terminate; and (2) refused,<sup>361</sup> although the operator does not necessarily have to charge refusal.<sup>362</sup> If the operator wants to allow a subject more than 11 attempts, he can simply restart the process.<sup>363</sup> A subject may observe the LED screen at the operator's discretion.<sup>364</sup>

## II.

### INDICIA OF RELIABILITY:

**After Software Verification, All Indicia of Reliability Must Exist Simultaneously to Assure that Alcotest Results Are Reliable.**

All criteria set forth at the outset of this brief must be followed to adequately assure Alcotest reliability. This Court should require these safeguards to exist before any Alcotest 7110 result can be considered valid. See the section entitled *Agreement with the Special Master, supra*.

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<sup>358</sup> SMR114, 52T73.

<sup>359</sup> SMR114, 52T73.

<sup>360</sup> SMR114, 52T74.

<sup>361</sup> SMR114, 52T82.

<sup>362</sup> SMR114, 52T90.

<sup>363</sup> SMR115, 52T81-82.

III.

**ALCOHOL INFLUENCE REPORT:**

**A Defendant's Right to Cross-Examination Precludes Admission of Alcohol Influence Reports in Evidence.**

Judge King rejected the defense contention that the Alcohol Influence Report should not be admitted into evidence.<sup>365</sup> But the assertion that the Alcohol Influence Report will show if an instrument inadvertently used the default setting<sup>366</sup> is simply not true, and the transcript references<sup>367</sup> do not support this erroneous contention. In any event, Judge King declared that "a municipal court judge should not rely on an alcohol test where the AIR showed an irregularity."<sup>368</sup> While this conclusion is sound, the conclusion supporting admission of the Alcohol Influence Report runs afoul of the defendant's right to confront witnesses. See discussion *supra*.

IV.

**MARGIN OF ERROR:**

**All Alcotest Results Are Subject to a Margin of Error.**

There is uncertainty and error in all measurements because all technology is limited.<sup>369</sup> Ryser testified about a margin of error determined by using freshly certified standard solution and a NHTSA-approved simulator, explaining that the margin of error for the Alcotest 7110 is "plus or minus .005 B[r]AC (absolute

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<sup>364</sup> SMR115, 57T93-95.

<sup>365</sup> SMR232(d).

<sup>366</sup> SMR121.

<sup>367</sup> 53T19, 55T87.

<sup>368</sup> SMR203, 18T96.

<sup>369</sup> SMR85, 97, 137, 150, 160; Conde at 1T112; Gullberg at 11T112, 12T103; Logan at 4T51.

tolerance) or plus or minus 5% (relative tolerance), whichever was greater."<sup>370</sup> The absolute tolerance applied to concentrations below .10 whereas the relative tolerance applied at or above .10.<sup>371</sup> Therefore, a subject who presented a reading of .08 would have a relative tolerance window from .076 to .084 and an absolute tolerance window from .075 to .085.<sup>372</sup> Ryser was unaware of any state program that automatically reduced an alcohol reading by the instrument's margin of error, although he noted that Alabama apparently recognized it by refusing to prosecute anyone unless they had result of at least .084.<sup>373</sup>

Similar margin for error applies to testing simulator solution strength. For the .10 solution change, Brettell set the tolerance at .005 or five percent.<sup>374</sup> Draeger's default tolerance is set at .010 or 10 percent.<sup>375</sup> Although Logan did not actually review the underlying data,<sup>376</sup> he relied upon the results of New Jersey's testing program using known vapor phase standards from a wet-bath simulator which showed that the Alcotest 7110 was capable of making measurements within 5% of the reference or control value.<sup>377</sup>

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<sup>370</sup> SMR59; 50T17-18, 51T64, 61T65, 61T71-72.

<sup>371</sup> SMR59; 50T18-19.

<sup>372</sup> SMR59-60; 61T72.

<sup>373</sup> SMR60; 50T19.

<sup>374</sup> SMR41.

<sup>375</sup> SMR41, 84.

<sup>376</sup> 6T114-15.

<sup>377</sup> SMR165, 4T89.

Various witnesses opined additional uncertainty based on biological factors.<sup>378</sup> For example, Gullberg agrees with breath testing authority A.W. Jones that software can and should be programmed to deduct from a reported breath test result to account for all sources of uncertainty; such a deduction should be made even where two breath test readings agree to three decimal places, because such agreement may simply be by chance.<sup>379</sup>

V.

**ANOMALIES:**

**Conflicting Testimony Revealed Interesting but Unexplained Anomalies.**

**Blind Tests in Court.** To demonstrate reliability, Judge King conducted a blind test. For the blind test, Flanagan blew through the breath hose which was hooked up to the front of the simulator, and produced the following results: .151 EC and .153 IR for breath test one; and .151 EC and .155 IR for breath test two.<sup>380</sup> At defense request, Flanagan repeated the test using the same bottle of solution and produced results of .150 EC and .152 IR for breath test one and .150 EC and .152 IR for breath test two.<sup>381</sup> Flanagan then used the same .16 solution, but introduced his breath vapor through the rear of the instrument as part of

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<sup>378</sup> See, e.g., Logan's 20 percent at SMR166, 7T53.

<sup>379</sup> 10T130-32.

<sup>380</sup> SMR125, 53T73, S-62.

<sup>381</sup> SMR125, 53T72, S-64.

the control test.<sup>382</sup> These tests produced a printout showing results of .152 EC and .153 IR.<sup>383</sup>

Not only were most of these results beyond the five percent tolerance allowed for simulator solutions, but Flanagan's explanations for these failures -- that a solution designed for 50 uses depleted after only six uses,<sup>384</sup> and that an instrument requiring calibration checking annually was out of calibration after the six-and-one-half months between May 12 and November 28, 2006<sup>385</sup> -- are unsatisfactory.

A hand picked operator using a hand picked machine with fresh simulator solution failed to obtain accurate results.

**Sucking.** Flanagan trains operators to be keenly aware of subjects who suck air from the room through the top port, normally used to draw in air for ambient air checks or purges.<sup>386</sup> He believed that the instrument reported a result of .000 because it could not distinguish room air from breath.<sup>387</sup> When operators observe sucking, the ADTU instructs them to terminate the test and charge the subject with refusal.<sup>388</sup> There is no error message for "sucking."

Ryser briefly addressed the "sucking" issue.<sup>389</sup> He was unaware of similar complaints from other users and was unable to

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<sup>382</sup> SMR125; 53T79-83, 55T47, 60T52-53.

<sup>383</sup> SMR125, 53T85, S-65.

<sup>384</sup> SMR125, 53T85.

<sup>385</sup> SMR125, 54T5-7, 60T54.

<sup>386</sup> SMR112; 53T60-61, 53T68, 54T81.

<sup>387</sup> SMR112, 53T61. See SMR128; 54T46-49; D-129, D-130.

<sup>388</sup> SMR112; 53T61, 53T67, 54T76-78.

<sup>389</sup> SMR70; 61T36, 61T63.

duplicate the problem when Durango tested three instruments.<sup>390</sup>  
"Because the subjects in New Jersey apparently sucked the air into the instrument through the port by the breath hose, Ryser thought the problem could be a hardware issue."<sup>391</sup>

## VI.

### NO BLIND VERIFICATION:

**Hand-Picked Machines Sent to NHTSA and Pre-selected Pre-designated Simulator Solution Bottles Sent to the State Police Laboratory Lent a Bias Favoring the State and Manufacturer Without Safeguarding the Public. So-called Informal Undocumented Side-by-Side and RFI Testing Failed to Verify Reliability.**

Brettell talked of him and his predecessor doing side-by-side testing for accuracy, precision, linearity, and specificity, comparing the Alcotest 7110, BAC Datamaster, Intoxilyzer 5000, and Intoximeter.<sup>392</sup> Yet, the only record of this testing in the present record is "the abstract here which is no more than elaborate headnote, published legal opinion."<sup>393</sup> Brettell also relied of "informal" -- read uncontrolled or adequately documented -- testing when he waved "walkie-talkies, radios, and 'things like that'"<sup>394</sup> around a machine.

**NHTSA.** The State touted NHTSA testing as a form of validation. This is error.

NHTSA has a conforming products list that it publishes

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<sup>390</sup> SMR70; 61T38, 61T64.

<sup>391</sup> SMR70, 61T64.

<sup>392</sup> SMR73; 33T36-38, 33T41-42, 33T49, 34T35-37; D-185.

<sup>393</sup> 33T38-39.

<sup>394</sup> SMR76, *see* SMR82.

periodically in the Federal Register.<sup>395</sup> If an instrument that has been submitted for tests passes the model specifications successfully, then it is listed on that conforming products list.<sup>396</sup> It is information for regulators and users of the instrument that indicates this manufacturer is capable of making such an instrument and that it meets these specifications.<sup>397</sup>

After initial testing according to model specifications,<sup>398</sup> NHTSA requires retesting of proposed hardware or software changes only if they are likely to affect an instrument's ability to return an accurate and precise result. SMR133; 1T77, 1T79-80. But, like Brettell, Conde and his cohorts lacked the expertise to make those types of judgments about programming. Regardless, they made no determinations about software.

When Conde did type approval according to NHTSA specifications, he destroyed 49 of the 140 AIRS generated and accepted one which noted a control test failure.<sup>399</sup> For NHTSA, Draeger and the State hand-picked particular machines for review. Similarly, Draeger hand-picks six particular simulator solutions bottles from each lot of 1000 for Brettell's laboratory to test to make sure they are within tolerance.<sup>400</sup> The single blind proficiency testing for Collaborative Testing Services, Inc.

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<sup>395</sup> 3T93.

<sup>396</sup> 3T93.

<sup>397</sup> 3T93-94.

<sup>398</sup> See SMR134; 1T53-54, 1T60-67, 1T69-70, 1T73, 1T77, 1T106-07, 2T46, 2T97-98.

<sup>399</sup> SMR136; 2T102-05, 3T10-14.

<sup>400</sup> SMR41, see SMR120.

(CTS),<sup>401</sup> involved only two bottles of simulator solution.<sup>402</sup> Indeed, during the blind testing conducted by Judge King during the hearings, the Alcotest 7110 failed to accurately measure the alcohol content of a controlled simulator solution.<sup>403</sup>

While Gullberg did much statistical analysis of the Middlesex data, his sample was incomplete (*i.e.*, 1334 duplicate breath alcohol results out of a total sample of about 1900 results).<sup>404</sup> He eliminated all cases where irregularities occurred -- *i.e.*, those most likely to uncut a reliability finding. By only selecting "good" results, Gullberg was able to meet his tight deadline imposed on him by Brettell and render results more favorable to the State.<sup>405</sup>

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<sup>401</sup> SMR102.

<sup>402</sup> 52T14-15.

<sup>403</sup> See SMR125-26.

<sup>404</sup> SMR146; 9T20, 13T5.

<sup>405</sup> 11T37-38.

## CONCLUSION

According to Judge King, the Alcotest 7110 would be scientifically reliable "when the test protocol is carefully followed by the operator,...the instrument is functioning properly,...and "our recommendations are followed,"<sup>406</sup> including: software verification according to the Sachs' protocol (*Addendum A*)<sup>407</sup>; periodic collection, downloading, analysis, and disclosure of data; making allowance for breath temperature and relevant physiological factors; and recognition of the margin for error. Only in this way can "suspects and the general public [receive] the best possible assurance for the protection of individual rights and for public safety."<sup>408</sup>

Respectfully submitted:

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<sup>406</sup> SMR252.

<sup>407</sup> SMR236, Da27-28.

<sup>408</sup> SMR253.