
STATE OF NEW JERSEY, : QUASI-CRIMINAL ACTION
Plaintiff-Appellant, : On Review of a Supplemental
v. : Remand to the Superior Court
: of New Jersey, Law Division.
JANE H. CHUN, et al., :
Defendants-Respondents. : Sat Below:
: Hon. Michael Patrick King, P.J.A.D. (ret.)
: Special Master

BRIEF ON BEHALF OF THE STATE OF NEW JERSEY

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STATEMENT OF PROCEDURAL HISTORY

The State relies on the Statement of Procedural History set forth in its plenary brief, with the addition of the following.

On April 5, 2007, this Court heard oral argument on the Special Master's original findings and recommendations concerning the scientific reliability of the Alcotest 7110 MKIII-C breath testing instrument. By order dated April 30, 2007, as supplemented by order dated May 22, 2007, the Court temporarily remanded the matter to the Special Master to allow defendants the opportunity to conduct an analysis of the instrument's software, referred to as Firmware version 3.11, including its source code, and established the procedure for a hearing on the limited issue of determining whether the firmware "reliably analyze[s], record[s] and reports alcohol test results."

The Special Master held the supplemental remand hearing between September 17 and October 24, 2007.¹ On November 8, 2007, the Special Master issued Supplemental Findings and Conclusions

¹ The supplemental remand hearing dates, and corresponding transcript references, are as follows.

1RT refers to September 17, 2007 hearing transcript.

2RT refers to September 18, 2007 hearing transcript.

3RT refers to September 19, 2007 hearing transcript.

4RT refers to September 20, 2007 hearing transcript.

5RT refers to September 24, 2007 hearing transcript.

6RT refers to September 25, 2007 hearing transcript.

7RT refers to September 26, 2007 hearing transcript.

8RT refers to October 9, 2007 hearing transcript.

9RT refers to October 10, 2007 hearing transcript.

10RT refers to October 11, 2007 hearing transcript.

11RT refers to October 23, 2007 hearing transcript.

12RT refers to October 24, 2007 hearing transcript.

of Remand Court. By letter dated November 14, 2007, the Clerk of the Court issued a briefing schedule on the supplemental findings, and set oral argument for January 7, 2008.

LEGAL ARGUMENT

POINT I

THE COURT SHOULD UPHOLD THE SPECIAL
MASTER'S CONCLUSION THAT THE
ALCOTEST 7110 MKIII-C IS
SCIENTIFICALLY RELIABLE IN BOTH ITS
HARDWARE AND SOFTWARE COMPONENTS.

The Special Master, in a second comprehensive report, again has determined that the Alcotest 7110 MKIII-C ("Alcotest") is scientifically reliable and acceptable for evidentiary breath testing in New Jersey prosecutions. Specifically, the Special Master has concluded that the proofs at the original evidentiary hearing and at the remand hearing clearly and convincingly demonstrate that "the Alcotest is scientifically reliable, both as to software and hardware, in reporting alcohol breath testing results for evidentiary purposes." Supplemental Findings and Conclusions of Remand Court (Law Div., November 14, 2007) at 80, 5-6. (hereinafter "Supplemental Findings and Conclusions"). According to the Special Master, "the proofs at the remand hearing on the software and source code aspect did not change our opinion on reliability and trustworthiness of the instrument but reinforced our initial view." Id. at 80. This Court should accept the Special Master's finding that the Alcotest is scientifically reliable because his determination is fully supported by overwhelming credible evidence in the record. Supplemental Findings and Conclusions at 16 to 79. State v. Johnson, 42 N.J. 146, 160-61 (1964). See, also, State v. Elders, 192 N.J. 224, 243-45 (2007) (reinforcing the deferential standard

of review of factual findings established in Johnson, supra); State v. Locurto, 157 N.J. 463, 474 (1999) (same); State v. Barone, 147 N.J. 599 615 (1997); State v. Martinez, 387 N.J. Super. 129, 140 (App. Div.), certif. denied, 188 N.J. 579 (2006).

Acceptance of the fact finder's fundamental conclusion is especially compelled in this case, where, as with his initial report, the Special Master made express credibility determinations. The Special Master presented a detailed review of the testimony and demeanor of each witness at the supplemental remand hearing. Significantly, the Special Master concluded that the State's witnesses were highly credible, and he gave substantial weight to their "impressive" testimony.² Specifically, the Special Master found that Bruce Geller from SysTest was "an honest and technically impressive witness, without bias." Supplemental Findings and Conclusions at 28. The Special Master determined that Norman Dee from CMX Group was "an impressive witness," as in the original hearing, and that he was "fair and even-handed in all respects." Supplemental Findings and Conclusions at 36. And the Special Master found Brian Shaffer from Draeger to be impressive in his "candor, cooperation, careful explanations, and dignified demeanor" and

² The State and intervenor Draeger are separate parties with differing interests; however, both parties presented witnesses (Bruce Geller and Norman Dee) for the common purpose of establishing the scientific reliability of the Alcotest instrument. For ease of reference, this brief refers to these witnesses, as well as to Draeger employee Brian Shaffer, whose participation was requested by the Court, and who was called by the State in rebuttal, as the "State's witnesses."

that his testimony was "reliable and forthright." Supplemental Findings and Conclusions at 79.

In contrast, the Special Master found that the defense witnesses were less credible and not impressive. In particular, the Special Master found that John Wisniewski of Winc Research (retained by the "virtual company" Base One Technologies) was "very negative and deconstructive," saying "many things were wrong but did not convince us that these negatives made the Alcotest unreliable." Supplemental Findings and Conclusions at 48. Indeed, the Special Master expressly doubted that Wisniewski "was as experienced as he portrayed."³ Id. Similarly, Judge King found that Thomas E. Workman, Jr., who "primarily works as a court-appointed criminal defense attorney in misdemeanor court in Massachusetts for clients charged with operating-under-the-influence (OUI), assault and batteries, and other misdemeanors," Supplemental Findings and Conclusions at 49, was neither persuasive nor convincing in his attacks on the Alcotest's suitability. Supplemental Findings and Conclusions at 61.⁴

A fundamental principle of appellate review instructs that a reviewing court "should give deference to those findings of the

³ In analyzing the computer source code of a state-of-the-art evidential breath testing instrument, Wisniewski employed "Lint," a program considered by other experts to be "a product of the 70's" that was no longer commonly used and "irrelevant." Supplemental Findings and Conclusions at 34-35, 21.

⁴ The Special Master only admitted Workman's testimony within the limited confines of R. 1:7-3, permitting a proffer of excluded evidence, and considered Workman's views to be of little evidentiary weight. Supplemental Findings and Conclusions at 61.

trial judge which are substantially influenced by his opportunity to hear and see the witness and to have the 'feel' of the case, which a reviewing court cannot enjoy." State v. Johnson, supra, 42 N.J. at 161; State v. Locurto, supra, 157 N.J. at 474 (trial court's findings "are often influenced by matters such as observations of the character and demeanor of witnesses and common human experience that are not transmitted by the record"); State v. Elders, supra, 192 N.J. at 243-44. Plainly put, the Special Master found the State's witnesses, not the defense witnesses, persuasive, by a wide margin. There is no reason to disturb either these credibility determinations or the critical substantive finding that flows from them, namely, that the Alcotest is a scientifically reliable instrument for use in evidential breath testing.

POINT II

THE SOURCE CODE COMPONENTS SUPPORT
THE SCIENTIFIC RELIABILITY OF THE
ALCOTEST. THE LIMITED "BUFFER
OVERFLOW" ISSUE IS EASILY
ADDRESSED, AND THE SPECIAL MASTER'S
OTHER RECOMMENDATIONS DO NOT
PERTAIN TO THE BASIC RELIABILITY OF
THE INSTRUMENT.

The Special Master separately reviewed and summarized the various source code related issues raised during the remand hearing. Supplemental Findings and Conclusions at 81-107. As the State already has noted, the Special Master, addressing the specific charge this Court gave to him, concluded that the scientific reliability of the Alcotest was not undermined. Id. However, the Special Master did not stop there, but also offered additional breath testing "recommendations." While the State is of course willing to consider any factors toward improvement of its breath testing program, there is a difference between program improvement and basic reliability. Suggestions in the former category are more appropriately left to the careful consideration of program administrators and scientists, who are better equipped to consider and evaluate various options. More basically, with the exception of the limited "buffer overflow" issue applicable to cases involving the administration of valid third breath tests,⁵ the Special Master's extra recommendations do not impact

⁵ The term "valid third breath tests" refers to third breath tests that actually analyze for breath alcohol and then produce evidential measurements, to be distinguished from situations where a third breath test is administered, but, for some reason

(continued...)

upon the basic reliability of the Alcotest instrument, are beyond the scope of the supplemental remand hearing, and should not affirmatively be imposed by this Court.

At the hearing, State's witness Bruce Geller testified about a "buffer overflow" he discovered in the Alcotest source code (notably, an issue not detected by any defense witness). (1RT114-11 to 116-10; 1RT163-9). Brian Shaffer, the programmer for Draeger, inadvertently introduced the buffer overflow when implementing changes that the State had requested in the wake of the earlier Camden County Alcotest reliability hearing. State v. Foley, 370 N.J. Super. 341 (Law Div. 2004); (5RT39-24 to 40-4; 5RT154-11 to 155-25; 6RT19-9 to 20-17). The buffer overflow that Geller discovered was located in a sorting routine active in the customized portion of the source code, and was limited to New Jersey software. (10RT231-19 to 232-2; 10RT246-9 to 16). Specifically, in this particular sorting routine, designed to list the subject's lowest breath test measurement as the final reported result, Shaffer allocated only four spaces for data when, in actuality, six spaces were needed to accommodate situations when a subject takes three valid breath tests. (6RT19-9 to 20-17; 6RT94-5 to 9).

Because Shaffer was using a temporary local variable, his four space allocation does not affect the six actual measurements reported on the Alcohol Influence Report ("AIR") for the

⁵ (...continued)
(e.g., insufficient breath sample), a valid evidential measurement is not obtained.

subject's three evidential breath tests. (5RT41-9 to 42-12). These six measurements will report correctly on the AIR, and will be recorded correctly in the electronic data log.

Additionally, the possibility of buffer overflow actually affecting the final reported reading is very rare. Buffer overflow only occurs when: (1) breath tests one and two are not within tolerance of each other, thus requiring breath test three; AND (2) breath test three is in tolerance with both breath test one and two; AND (3) of the three valid breath tests, the lowest reported measurement for breath test two is the fuel cell measurement (as opposed to the infrared measurement). (1RT119-8 to 122-4; 5RT47-17 to 48-15). In these circumstances, the fuel cell measurement for breath test two will be overwritten by another value. The sorting routine will recognize that overwritten value instead of the lowest breath test reading, and, consequently, the lowest reading will not be listed as the final reported reading. (1RT121-23 to 126-13; 2RT119-1 to 124-215RT43-1 to 46-17).

The rarity of this "buffer overflow" actually producing an inaccurate result is confirmed by the available testing data, showing no actual impact to date. In the 2005 Middlesex County data, this buffer overflow did not occur, nor is the State aware of any subsequent incident of buffer overflow. (1RT145-16 to 146-11; original remand hearing 33T72-4 to 75).

Nevertheless, the Special Master recommended that the "buffer overflow" be addressed in future software versions.

Supplemental Findings and Conclusions at 87. The State will incorporate this change into the Alcotest firmware. Elimination of buffer overflow in future software versions is very easy, literally involving changing the number 4 to the number 6. (1RT129-23 to 130-8; 2RT124-22 to 125-5).

The Special Master also recommended that, pending the development of a new version of firmware to eliminate buffer overflow, a basic corrective formula requested from and developed by Draeger be applied to the test readings or, in the alternative, that the readings in cases with three valid breath tests be excluded. Supplemental Findings and Conclusions at 87. This is a simple mathematical calculation, with clearly defined steps, that the court and counsel can apply in cases involving three valid breath tests to confirm that the final reported result is the lowest breath test reading. The supplemental remand record supports the validity of the mathematical calculation, and this Court should accept its use until the permanent elimination of buffer overflow by way of a software modification.⁶ The more drastic measure of excluding breath test results is wholly unwarranted.

⁶ Application of the mathematical formula essentially works as follows. As mentioned supra, the buffer overflow does not affect the six measurements from the three valid breath tests - the measurements will report correctly on the AIR. The Draeger formula will be used to check whether the readings for breath test three are in tolerance with the readings for breath tests one and two. If that circumstance is present, the lowest reported reading will be selected for evidentiary purposes. (6RT121-17 to 122-4; 10RT234-20 to 235-22; 10RT237-10 to 238-20; CR-3).

The State takes this opportunity to briefly discuss another of the Special Master's recommendations - that of "catastrophic error detection." Supplemental Findings and Conclusions at 102. This recommendation was based upon the testimony of the State's witnesses, who all agreed that lack of catastrophic error detection in the instrument does not detrimentally affect breath test readings, but that the presence of such detection could be an improvement. (1RT147-18 to 149-17; 3RT178-20 to 179-17; 5RT20-11 to 23-14; 5RT149-19 to 151-12; 5RT214-12 to 219-19; 6RT36-7 to 37-17; 6RT43-25 to 50-17).

Although the recommendation does not directly impact on the basic scientific reliability of the instrument, the State has considered its witnesses' testimony and intends to add "catastrophic error detection" to its use of the Alcotest. In fact, this issue appears to be moot in that Brian Shaffer testified that Draeger, the manufacturer, intends to implement this change for all its customers and already is working on the relevant modification for future software versions. (5RT20-25 to 21-9; 6RT36-7 to 12).

The remaining four ancillary recommendations of the Special Master neither directly relate to the source code - the subject of the supplemental remand - nor have support in the record. As with his discussion relating to a breath temperature sensor and recommendations of a similar nature in his original report, the Special Master has offered what amount to programmatic options that do not affect the underlying scientific reliability of the

instrument. In so doing, the Special Master has stepped outside the role the Court has designated for him (determining the Alcotest's basic reliability).

The first ancillary recommendation relates to Draeger's method of compensating for the aging of a fuel cell over time. Fuel cell technology, as well as the calibration procedure (every twelve months or as-needed basis), were fully addressed in the original hearing and accepted. Original Findings and Conclusions of Remand Court at 30, 48, 175. The supplemental remand hearing did not change the Special Master's views regarding basic reliability.

Nevertheless, the Special Master recommends that the Alcotest be calibrated every six months, rather than the currently prescribed twelve months or as-needed basis. Supplemental Findings and Conclusions at 84. The calibration procedure is beyond the scope of the supplemental remand hearing. Nor did the supplemental remand witnesses suggest that the calibration procedure should be changed. There also are administrative and resource issues which necessarily need to be considered in deciding whether to implement such a change.

The Special Master's second ancillary recommendation - that "incomplete AIR's should never be used for evidentiary purposes" - is based upon consideration of a sole Alcohol Influence Report containing blank data fields corresponding to the standard solution change. Supplemental Findings and Conclusions at 78; (AB-1; AB-2). However, this single Alcohol Influence Report was

from outside of Middlesex County, the venue of this litigation. Moreover, amicus NJSBA, which introduced this document, did not provide it in discovery until after the AIR's introduction over the State's objection at the supplemental remand hearing. (3RT105-7 to 106-20). Without a fair opportunity to investigate potential causes of the blank fields, Shaffer was unable to determine whether they were was caused by operator error, hardware, or software, or what conditions may have existed at the time of the breath testing. (6RT119-14 to 21). Thus, the remand record contained no direct connection between the source code and the AIR blank fields. Norman Dee noted that the blank fields could have been caused by a printer problem or some other issue not directly related to the Alcotest source code. (4RT140-18 to 148-14).

More fundamentally, the information contained within the data fields of the Alcohol Influence Report is available from other document sources, such as the Arrest Report, Calibration Check Report, and New Standard Solution Change Report that are provided in discovery, as well as from testimony of the appropriate police and scientific witnesses. Thus, even when an issue may arise as to the absence of data entry on the AIR, it potentially could be remedied with other documents and testimony. The prosecution should be left to utilize all its available proofs. The Special Master's recommended rule of per se inadmissibility whenever there is a blank field in the AIR is simply unwarranted.

The Special Master also chose, in his supplemental report, to revisit - in a single sentence - the issue of foundational materials: "Foundational materials should be provided in all contested cases, not just in pro se or unrepresented cases as per our prior opinion." Supplemental Findings and Conclusions at 107; Original Findings and Conclusions of Remand Court at 244-245. This topic has nothing to do with the source code, nor was it the subject of any testimony during the supplemental remand hearing.

As elicited in the original remand hearing, various Alcotest documents are routinely provided in discovery. (Exhibit D-124). Whether all these documents are evidentiary prerequisites to the admissibility of the Alcotest readings is an entirely different matter. See Point III of the State's original brief to this Court (dated February 28, 2007). (Sb19 to 24). The State reasserts that the minimum foundational proofs necessary to establish a per se breath test result should be limited to: the Alcohol Influence Report, the Calibration Check Report, the New Standard Solution Change Report, and the Breath Test Operator Card. These four documents alone establish that the Alcotest instrument "is in proper working order, is administered by a qualified operator and is used in accordance with accepted procedures, and that such results may, upon the establishment of these conditions, form the basis upon which a conviction of violating N.J.S.A. 39:4-50 may be obtained" as required by Romano v. Kimmelman, 96 N.J. 66, 79 (1984).

The Special Master's final ancillary recommendation is yet another single-sentence addition on a subject not raised by the testimony during the supplemental remand hearing. The Special Master recommends that written notice of any proposed software revisions pursuant to Addendum A should be provided to "the State Bar, through its counsel Jeffrey E. Gold of Cherry Hill." Supplemental Findings and Conclusions at 107. This issue has nothing to do the scientific reliability of the Alcotest. There is no basis for creating such a peculiar notice requirement for the benefit of the NJSBA and its representatives, particularly since there has been no showing that any software-revision notice at all is necessary.

The Special Master commented that developing source code for an evidential breath tester is a "dynamic, evolutionary process." Supplemental Findings and Conclusions at 81. Judge King then stated that "the process should be re-examined and re-evaluated periodically and neither the legal nor the forensic community should fear improvement of the accepted wisdom when necessary." Id. But the Special Master carefully noted that "simply because a procedure can be improved, does not necessarily mean the older model was illicit or worthless." Ibid. Indeed, one of the benefits of modern evidential breath testing is the ability of various state programs to select from many available options, depending upon differing needs. The mere fact that two state programs may select different options does not mean that either program's choice undermines the basic reliability of its

instrumentation or procedures.

This continuing evaluation by professionals trained in the field, with changes being made when determined necessary to strengthen the process or address new issues, is precisely why the courts have recognized that programs developed by executive branch officials, involving choices from among reasonable alternatives, "should not be second guessed by the judiciary." State v. Kadelak, 280 N.J. Super. 349, 371 (App. Div. 1995) (citing Michigan State Police v. Sitz, 496 U.S. 444, 453-55, 110 S.Ct. 2481, 2487, 61 L.Ed.2d 412 (citing Brown v Texas, 443 U.S. 47, 50-51, 99 S.Ct. 2637, 2640, 61 L.Ed.2d 357, 361-62 (1979)). The evidentiary record demonstrates that New Jersey's implementation of a program of evidential breath testing utilizing the Alcotest 7110 MKIII-C is scientifically and legally sound. That said, the judiciary has recognized that future review and refinement is largely left to the executive branch.

POINT III

THE COURT SHOULD PROVIDE EXPLICIT
GUIDANCE AS TO THE PROCEDURAL
MECHANISM FOR DISPOSITION OF
PENDING CASES.

As a result of the protracted litigation in this matter, encompassing two remand hearings and two reviews by this Court, the Court's prior orders staying the imposition of sentencing for certain DWI offenders have created a substantial backlog of cases in the court system. Therefore, it is imperative that this Court not only affirm the scientific reliability of the Alcotest, but also expressly set forth a procedure to expedite resolution of affected cases and eliminate the backlog. The Court's specific instruction will benefit all participants in the adjudicatory process, as well as promote the public interest. The State respectfully requests that this Court provide explicit guidance as to procedures for dissolution of stays and the orderly execution of sentences.

Additionally, as these hearings have demonstrated, the State intends to implement certain modifications to the current NJ 3.11 software and state program. However, the firmware revision process is time consuming (e.g., development of a beta version, laboratory and field testing of the beta version, revisions of specifications as necessary, etc.), and new DWI cases will be prosecuted while the firmware revision process is pending. The State therefore requests that this Court expressly hold that only the "buffer overflow" issue requires immediate action, namely, the Draeger mathematical formula should be applied in pending

"valid third test" cases. Other firmware modifications designed to improve the breath testing program do not affect the basic scientific reliability of the Alcotest. Consequently, these proposed modifications require no intermediate corrective measures and have no impact on the legitimacy of breath test readings or the prosecution of DWI cases.

Finally, the State again emphasizes that it was not a party to, nor involved with the development of, the "Addendum A" agreement between Draeger and defense counsel. It remains the State's position that, given the substantive evidence in the entire remand record (e.g., black box testing), the scientific reliability of the Alcotest and its firmware (present and future versions) is not conditioned upon satisfying Addendum A.⁷

The State's interest in this regard is particularly acute since the performance of the Addendum A provisions depends on the cooperation of disputing parties outside the State's control - the manufacturer and defense counsel. As demonstrated in this contentious remand hearing, these parties will be unable to agree on a software testing house, as required in Paragraph One of Addendum A. It also is doubtful that these parties will be able

⁷ For purposes of future versions of Alcotest firmware, should the Court be inclined to establish a presumptive or determinative finding of reliability for any firmware that is tested by an independent software house, the record in this case reveals the clear choice for such analysis. The independent software house should be SysTest, which already has thoroughly and expertly examined the New Jersey Alcotest source code, or another software testing house with credentials and expertise equivalent to SysTest.

to work together, as required in the remaining Paragraphs of Addendum A. For this additional reason, the State requests that the Court clearly reject the notion that the underlying scientific reliability of the Alcotest instrument is any way contingent upon compliance with Addendum A.

CONCLUSION

For the foregoing reasons, the State respectfully requests the Court to accept the Special Master's findings and conclusions, with exceptions as noted in the State's plenary and supplemental briefs.

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