

STATE OF VERMONT

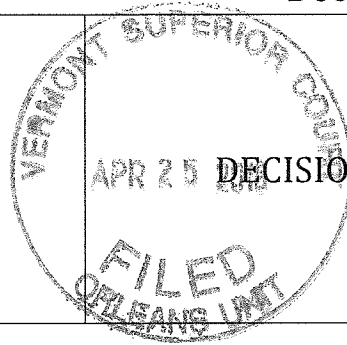
SUPERIOR COURT
Orleans Unit

CRIMINAL DIVISION
Docket No. 155-4-15 Oscr

State of Vermont

v.

Ronda Malshuk, et al,¹
Defendant



DECISION ON MOTION

This driving under the influence of alcohol case comes before the Court on the State's September 24th, 2015 Motion to allow relation-back testimony concerning the operator's likely blood or breath-alcohol level at the time of operation.² At the time of the filing of the Motion, twenty four other cases had also been joined with Ms. Malshuk's case on the unrelated grounds that the Datamaster results in the cases had to be excluded because of the lack of accreditation of the Vermont Forensic laboratory.³

Each operator/defendant is represented by the David Sleigh law office. The State is represented in all cases by Deputy States Attorney Michelle Donnelly and Deputy States Attorney Greg Nagourney.

The cases remain grouped with Ms. Malshuk's on the defense challenge to the State's request to admit relation-back evidence. This challenge evidently emerged as part of the arguments in unrelated civil suspension cases, prompting the State to file, on September 24th, 2015, a Motion specifically seeking validation in advance of trial of the use of relation-back evidence. The Defense replied in opposition to the Motion on October 5th, 2015, asking that the Court prohibit the use of relation-back evidence. On October 7th, 2015 the Defendant filed a supplemental memo on this issue.

Hearing was held before the undersigned on January 20th, 2016. At the hearing the Court received testimony from the State from the Vermont Forensic Laboratory's Senior Chemist Amanda Bolduc and Defense expert Dr. Robert J. Bellotto, Jr. In addition, the Parties submitted several hundred pages of exhibits including, among other things, scientific articles and deposition or trial transcripts.

¹ Appendix 1 is the listing of all cases that have been joined with this Motion.

² When a DWI suspect gives a sample of his or her breath beyond the two hours provided in the statute the State cannot take advantage of the permissive inference contained in Title 23 V.S.A. § 1204(a)(2), and so seeks to have an expert testify, using a method known as retrograde extrapolation, also known as relation back, as to what the suspect's BAC was at the time of operation. See also 23 V.S.A. § 1205(n) (pertaining to civil suspension cases). All of the cases joined to Ms. Malshuk present the issue of relation back, so called.

³ Judge Tomasi denied this Motion in a decision issued 6/18/15.

On January 21st and 27th the Defense filed a Supplemental Memorandum and a chart purportedly based on testimony from the experts at the January 20th, 2016 hearing. The State filed an objection to the Memo and the attached Exhibit (H) on January 26th, 2016, and the Defense replied on January 28th, 2016 in opposition. On February 8th, 2016 the Defense filed a lengthy Motion to Supplement the Record, to which the State did not reply. On April 1st, 2016 the Defense filed a new Motion to Exclude Relation Back Evidence in an unjoined, new, DWI case: *State v. Buckland*, 61-2-16 Oscr. The State replied to that Motion in opposition on April 12th, 2016.

Findings of Fact

1. The Malshuk Arrest and Processing

Police encountered Ms. Malshuk driving along Main Street in Barton, Vermont at about 0114. Her vehicle was going below the speed limit and weaving, once crossing the center line. Trooper Munson stopped Ms. Malshuk who said she had had a “couple” of drinks. The Trooper observed that Ms. Malshuk spoke slowly and her speech was slurred, she smelled of alcohol, and her eyes were watery. Her passenger appeared highly intoxicated and there were empty alcohol containers in the vehicle. When Ms. Malshuk failed the field sobriety tests and showed a positive presence of alcohol in her system on the preliminary breath screening device, she was arrested and brought back to the barracks for processing.

Ms. Malshuk eventually agreed to give a sample of her breath on the Datamaster machine, and did so at 0318, just more than two hours after she was stopped. For the purposes of this decision, the Court notes that all the joined Defendants present a similar fact pattern with regard to the timing of their breath sample.

2. Relation Back Evidence

In a driving while under the influence of alcohol case [hereinafter DWI] and a civil suspension case in Vermont the prosecution benefits from certain presumptions concerning the breath test results when the breath sample is taken within two hours of the time of operation of the motor vehicle. See 23 V.S.A. § 1204(a)(3); § 1205(n). Which statute is involved depends on whether the proceeding is a criminal prosecution or a civil suspension action. Breath sampling is the preferred evidentiary method for measuring the alcohol content of suspected DWI drivers in Vermont. The Datamaster infrared breath testing machine is the approved device, and these are located in most police offices around the State. However, in a minority of DWI arrests, for a variety of reasons, the breath sample is sometimes not obtained within two hours of the operation. For example, in many accident cases resulting in a DWI investigation, it is not uncommon for the operator not to be released from a medical facility within two hours, or breath testing equipment may not be available locally due to a malfunction or to the fact that the smaller police departments do not have assigned Datamaster machines.

When the breath test is taken beyond two hours after operation, the State must relate the test result back to the time of operation under the statute to show what the operator’s breath-alcohol content [hereinafter BAC] was at the time of operation. To do so, they typically establish the result through the testimony of the processing officer and admission of the test

result ticket from the Datamaster machine. They then call a chemist to discuss the mechanics of alcohol intake and elimination from the human body. This testimony, at the heart of the instant Motions, inevitably includes discussions—and assumptions—concerning both the rate at which human beings eliminate alcohol from their bodies and the time it takes after drinking ends to reach the highest, or peak, BAC.

Not contested here is the general notion that when consumed, alcohol is eliminated from the body through the lungs via breath, and through the kidneys and bladder in the form of urine. Thus its presence in a human body can be measured by analyzing samples of urine, blood, and breath. Most states have opted to collect breath samples, which is fast, non-invasive, and does not implicate personal privacy. Indeed, in Vermont, breath testing has been the preferred manner of measuring alcohol in a suspected DWI driver for nearly 50 years.

Amanda Bolduc is the supervisor of the breath and blood analysis programs for the Vermont Forensic Laboratory. She has been with the Vermont alcohol analytics program since 2005 and is a master's level chemist and forensic scientist. Ms. Bolduc studied under two of the recognized leading scientists in the realm of alcohol testing and the elimination and absorption of alcohol in the human body, doctors Duboski and A.W. Jones. Ms. Bolduc testified that retrograde extrapolation, or relation back, is a scientifically valid and recognized method well-established in the literature. The Court finds in this regard that the principles underlying relation back are neither new nor novel science.⁴

In order to relate a test result taken beyond two hours from operation back to the time of operation, one must know the test result, some details about the drinking pattern, and timing of the consumption of alcohol by the suspect. In addition, it is important to know to a reasonable degree of scientific certainty, how fast the suspect eliminates alcohol, and when the suspect reached the peak or highest BAC after his or her drinking ceased.⁵ Even in laboratory settings, under controlled circumstances, it is complicated and time-consuming to compute or measure the actual rate at which a particular person eliminates alcohol, see Testimony of Amanda Bolduc at 26, Exhibit C, but easier and possible to measure when they reach peak BAC. However, both Ms. Bolduc and Ms. Conte testified in conformity with the vast bulk of the scientific literature that obtaining these measurements is difficult, if not impossible, in the field during a DWI arrest and processing.⁶ Thus to enable relation-back calculations, since the police officer cannot determine when a DWI suspect reached peak,⁷ and does not know the suspect's

⁴ E.M.P. Widmark was one of the earliest scientific researchers on alcohol absorption and elimination, authoring many papers from 1914 to 1932 and devising the so-called Widmark Equation to illustrate graphically the absorption and elimination of alcohol. His linear graphs have since been modified to understand that an illustration of how alcohol is eliminated from the human body is not a classical bell curve, but rather a modified curve with a long and gradual elimination slope. Ms. Bolduc testified that she relies upon and finds credible as a scientist in this field, the works of Widmark, A.W. Jones (Ex. 3 and E), Wells (various Exhibits) and Shajani and Dinn, *Blood Alcohol Concentrations Reached in Human Subjects*, 18 Canadian Soc'y of Forensic Sci. J. 1 (1985); Exhibit 5.

⁵ Peak BAC is a necessary variable because it is not until a subject reaches peak concentration, or stops absorbing alcohol, that elimination occurs at a linear rate.

⁶ Ms. Bolduc testified, and the Court so-finds, that she does not and cannot know any individual Defendant's elimination rate. See also Exhibit E, A. W. Jones, *Evidence Based Survey of the Elimination Rates of Ethanol from Blood with Applications in Forensic Casework*, Forensic Sci. Int'l 200, 16 (2010) [hereinafter A.W. Jones].

⁷ Dubowski determined that there is a great variability between human beings in terms of the time at which they reach peak alcohol content after drinking. Dubowski found that the time to reach peak in men was, on average,

elimination rate, assumptions have to be used to create a generalized DWI testing regimen which accounts for the variations across the population.

First and foremost, an elimination rate is typically selected which, theoretically at least, benefits more members of the general population than it disadvantages. In order to deal with this problem the Vermont Forensic lab has selected an elimination rate of .015% per hour as its approved rate to be used in relation-back calculations. Ms. Bolduc testified that the majority of scientists in her field use an elimination rate of .015%, and that Vermont uses it because it benefits the “vast majority” of DWI suspects. Defendants challenge this selection arguing, correctly, that in the real world, elimination rates vary widely, and even can vary on different days within the same person. Ms. Bolduc agreed with the body of alcohol literature that shows that there is actually a range of elimination rates in the human population varying from .010% on the low end, to .020% or higher, on the high end.⁸ Second, where there is information from the suspect about when they stopped drinking, an assumption is made about when they in fact reached peak BAC. Yet, again, the evidence shows that time to reach peak varies widely. Notwithstanding the fact that these key computational vectors span a range, Vermont has adopted a .015% general elimination rate and an across-the-board 30 minute time to peak for all DWI relation-back computations. These assumptions underlie the policy choices that Vermont has made in order to administer its breath testing relation-back analyses.

The challenge, though, with assumptions, is that the generalizations that result therefrom may not, in fact, establish the desired accuracy or fairness that due process requires. For example, the vast bulk of the scientific evidence in this field shows that, in fact, human beings eliminate alcohol over a wide range of values, running roughly from .010%–.025%, and the time to reach peak can vary as much as from 14–138 minutes.⁹

Indeed scientists studying elimination rates conclude that a range of elimination rates more accurately represents the reality in the general population. See Exhibit F, Holzbecher and Wells, *Elimination of Alcohol in Humans*, 17 Canadian Soc’y of Forensic Sci. J. 4, 191 (1984) (concluding that a range of .010% to .020% is most accurate). Ms. Bolduc testified on September 18th, 2015 in the matter of *State v. Pollard*, No. 146-4-15 Oscr (Vt. Super. Ct. Sept. 18, 2015), and the Court so-finds, that the generally accepted low-end of elimination rates is .010%, and that using such a rate in a relation-back calculation benefits about 97.5 % of the population. Testimony of Amanda Bolduc at 47, *State v. Pollard*, No. 146-4-15 Oscr (Vt. Super. Ct. Sept. 18, 2015).¹⁰ At the high end of the range, while .025% is generally accepted in the

1.35 times longer than it is for women, yet Vermont’s test protocol makes no distinction based on gender. Studies also show that elimination rates get longer as people age, and can be affected by common situations such as the use of birth control medications. As a result of these variables, and the concomitant difficulty in determining peak alcohol content, Dubowski criticized relation back calculations as “forensically unacceptable.” Exhibit B, Kurt M. Dubowski, *Absorption, Distribution, and Elimination of Alcohol: Highway Safety Aspects*, 10 J. Stud. on Alcohol (July 1983) [hereinafter Dubowski].

⁸ Some studies describe elimination rates as high as .036%. See Exhibit F, Holzbecher and Wells, *Elimination of Alcohol in Humans*, 17 Canadian Soc’y of Forensic Sci. J. 4, 189 (1984). Age, gender, body composition, ethnicity, and food consumption can all affect elimination rates. Iffland and Jones, *Evaluating Alleged Drinking after Driving – the Hip Flask Defense*, 208 Med. Sci. and Law J., 209 (2002).

⁹ Dubowski, *supra* note 6, at 103.

¹⁰ However, on January 20th, 2016 when twice asked to quantify what percentage of the population benefits from the use of a .015% elimination rate, she declined to assign a percentage. In the *Pollard* case, upon receiving Ms.

literature, a handful of studies have found elimination rates as high as .035%. See Exhibit E, A. W. Jones, *Evidence Based Survey of the Elimination Rates of Ethanol from Blood with Applications in Forensic Casework*, *Forensic Sci. Int'l* 200 (2010). Ms. Bolduc conceded that scientists in her field agree that there is a range of elimination rates.¹¹

When asked why Vermont has selected .015% as its elimination rate, Ms. Bolduc testified that it is used because it is a conservative estimate benefitting the majority of the population. Yet Ms. Bolduc agreed that even among the population, there are studies showing differences in elimination rates between, for example, men and women, or people convicted of DWI versus the general population. *Id.* at 5–12. Studies show that the general population does benefit by the use of a .0154% elimination rate, while people with a DWI conviction show an average elimination rate of .019%. *Id.* at 14–15. Vermont makes no distinction in selecting .015% between those convicted of DWI and those who are not, nor does use of .015% distinguish between men and women, women using contraceptives, or account for age-related differences, all of which can affect elimination rates. Ms. Bolduc agreed that the elimination rate can even vary in the same individual on different days, but countered that the vast majority of people do fall somewhere within the range of elimination rates of .010%–.025%.¹² Ms. Bolduc concluded on January 20th, 2016 that .015% was an estimate, but consistently declined to assign a percentage estimate describing what percentage of the population benefits from the use of a .015% elimination rate.

Similarly, in deciding when to assign an alcohol peak to the relation back calculation, Vermont regulations and training materials require Ms. Bolduc to use a blanket figure of 30 minutes. While the evidence suggests that this figure, like the .015% elimination rate, is a “widely accepted” figure, it fails to take into account the fact that time to reach peak BAC, like an individual’s elimination rate, varies widely. As previously noted, many studies have found that time to reach peak BAC ranges from 14–138 minutes, and depends on a variety of factors including drinking pattern, whether the suspect has eaten, gender, etc. Further, while the peak BAC can be determined in the controlled setting of the laboratory, it is virtually impossible to measure and pinpoint in the field. Therefore, for the purposes of relation back, Vermont assumes a figure of 30 minutes,¹³ a figure widely accepted in the literature. Ms. Bolduc

Bolduc’s favorable testimony about using a .010% elimination rate, the defense then indicated that it thought that an elimination rate of .010% would be acceptable given that it truly benefitted the vast majority—e.g. 97.5%—of the population. See Exhibit C, at 50.

¹¹ As does the Vermont Forensic Laboratory Training Manual for Generating Affidavits in DUI cases. At page four it notes that “Elimination rates can vary between individuals.” See ¶ 4.2.5.1. It nevertheless advises its chemists to use an elimination rate of .015% per hour.

¹² R.B. Wells notes that as early as 1932 Widmark concluded that the actual range in North America appeared to be between .010% and .020%. See Exhibit F, Holzbecher and Wells, *Elimination of Alcohol in Humans*, 17 *Canadian Soc’y of Forensic Sci. J.* 4 (1984). However, some studies show elimination rates as high as .035%. Garriott’s *Medical-Legal Aspects of Alcohol* 88 (6th ed.).

¹³ Thus this assumption is founded on the notion that the driver, when tested, was in the post-absorptive phase and was only eliminating and no longer absorbing alcohol. However, some studies have shown that the majority of subjects did not reach peak until 5–80 minutes, with some needing more than 60 minutes (110 minutes being the maximum). See Exhibit 2, Widmark, *Principals and Applications of Medicolegal Alcohol Determination* 64 (1932). Widmark is considered, if not the father of alcohol-medical-legal research, then at least its principal pioneer, and is widely relied upon by scientists in the field, including Ms. Bolduc. Widmark recommended using a time to peak of 1.5 hours. See, A.W. Jones, *supra* note 5, at 6, Exhibit E.

testified, and the Court so-finds, that the relation-back figure is only an estimate based on the use of assumed figures for elimination rate and time-to-peak that appear to benefit most drivers.

At a civil suspension final hearing in *State v. Nugent*, No. 8-11-12 Excs (Vt. Super. Ct. Jan. 20, 2013), *aff'd*, 2014 VT 4, 195 Vt. 411, Trisha Conte, the then-supervisor for the Vermont Forensic Laboratory's alcohol program, testified about retrograde extrapolation, or relation-back analysis. Her testimony is strikingly similar to that of Ms. Bolduc's testimony in this matter. Ms. Conte testified that the literature regarding alcohol testing and pharmacokinetics demonstrates a wide range of values for the time it takes to reach peak absorption after cessation of alcohol consumption. Testimony of Trisha Conte at 57, *State v. Nugent*, No. 8-11-12 Excs (Vt. Super. Ct. Jan. 17, 2013). Specifically, she affirmed that certain studies show a wide range of 8–138 minutes to reach peak alcohol concentration. *Id.* Yet, she testified the State assumes the subject consumed his or her last alcoholic beverage 30 minutes prior to operation and has thus reached peak absorption. Ms. Conte further confirmed that the State also assumes a given, static elimination rate of .015% an hour for every subject, while acknowledging there is a variation among elimination rates. *Id.* at 57–58. Ms. Conte went on to acknowledge that the State's calculations assume the subject has been eliminating alcohol from the time of cessation to the time of the sample at a linear rate, despite recognizing that peak alcohol concentration could occur sometime after the time of interest. *Id.* Ms. Conte also testified that the State's calculations rely on information from the investigating police officer and assumes that information is accurate and reliable. Therefore, she has "no way to independently verify scientifically when alcohol consumption ceased." *Id.* at 60. Finally, she acknowledged her relation-back calculation would change if she applied a different absorption rate and that she had "no principled way of distinguishing" between the different outcomes. *Id.* at 62.

Dr. Robert J. Bellotto, Jr. is an expert on pharmacokinetics, that is, the study of how the human body absorbs and excretes drugs and alcohol. He testified on January 20th, 2016 that he has reviewed the Vermont alcohol analysis protocols and manuals with an emphasis on how Vermont requires that relation-back calculations be done. In addition he has studied hundreds of Datamaster results from a large metropolitan area, Ft. Wayne, Indiana. Dr. Bellotto concluded that using an elimination rate of .015% benefits only about 75% of the population, and a use of a 30 minute to peak standard only benefits about half of the population. He concluded that Vermont does not gather enough data during a DWI arrest from which to accurately determine either the subject's elimination rate or when he or she reached peak BAC. Failing that, the relation-back calculations Vermont implements using a 30 minute to peak standard, and a .015% elimination rate, do not meet reasonable standards for achieving a reasonable degree of scientific accuracy in the resulting relation-back number. Dr. Bellotto concluded, and the Court so-finds, that Vermont's procedures in this regard do not comply with accepted standards for the practice of forensic analysis.

On review of many studies of alcohol consumption, elimination rates, and attempts to relate BAC back from a known test result to the time of operation, the Court notes a common theme suggesting the use of a range for both elimination rates and time to peak BAC. In that regard, one alcohol scientist reached the conclusion that it is pointless to attempt to establish a

person's elimination rate in the field, and that far more research is needed in which the study simulates real world drinking. Exhibit E at 7–9.

Analysis and Opinion

Under Vermont Rule of Evidence 702, a qualified witness may testify in the form of an opinion if it “will assist the trier of fact to understand the evidence or to determine a fact in issue” and “(1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.” V.R.E. 702. “This [R]ule is intended to create a flexible standard requiring only that expert testimony be both relevant and reliable to be admissible.” *Estate of George v. Vermont League of Cities and Towns*, 2010 VT 1, ¶ 14, 187 Vt. 229 (internal quotation marks omitted). “Because our rules of evidence are ‘essentially identical’ to the federal rules, we have adopted the standards set forth in *Daubert* and its progeny governing admissibility of expert testimony.” *Lasek v. Vermont Vapor, Inc.*, 2014 VT 33, ¶ 8, 196 Vt. 243.

In exercising its discretion to admit expert testimony, the Court acts as a “gatekeeper” screening expert testimony to ensure it is reliable. *US Gen New England Inc. v. Town of Rockingham*, 2004 VT 90, ¶ 19, 177 Vt. 193. The Court must not simply weigh one expert against another, but rather engage in a more limited *Daubert* analysis. *State v. Burgess*, 2010 VT 64, ¶ 17, 188 Vt. 235. Defendant specifically challenges the reliability of the State’s expert testimony regarding retrograde extrapolation.

Under Rule 702 expert testimony must be “supported by scientific knowledge.” *In re Appeal of JAM Golf, LLC*, 2008 VT 10, ¶ 8, 185 Vt. 201 (internal quotation marks omitted). That is, it must be “ground[ed] in the methods and procedures of science,” and based on “more than a subjective belief or speculation.” *Id.* (internal quotation marks omitted); see also *Lasek v. Vermont Vapor, Inc.*, 2014 VT 33, ¶ 12, 196 Vt. 243 (“Proposed testimony must be supported by appropriate validation—i.e., ‘good grounds,’ based on what is known.” (citations omitted)). A “trial court must examine the expert's conclusions in order to determine whether they could reliably flow from the facts known to the expert and the methodology used.” *Estate of George v. Vermont League of Cities and Towns*, 2010 VT 1, ¶ 15, 197 Vt. 229 (internal quotation marks omitted). Moreover, a trial court is not required “to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert, and the court may properly conclude that there is **simply too great an analytical gap between the data and the opinion proffered.**” *Id.* (internal quotation marks omitted, emphasis added). Although it is true an expert’s opinion may be based on assumptions and inferences drawn from the available facts, the expert must account for each assumption and explain the rationale for each estimate. *State v. Scott*, 2013 VT 103, ¶¶ 15, 17, 195 Vt. 330.

The State bears the burden of persuasion in these cases to show that its relation-back conclusions are relevant and reliable as to the particular Defendant. Yet, the testimony adduced by the State during these proceedings was not markedly different than that in the matter of *State v. Nugent*, 2014 VT 4, 195 Vt. 411., in which the trial court concluded: “While [the chemist] may well have a solid scientific basis for her statements, without more specific support having been described at the hearing, the weight of her opinion is insufficient for the

Court to adopt her calculation as establishing BAC at time of operation.” *State v. Nugent*, 8-11-12 Excs, at 3 (Vt. Super. Ct. Jan. 29, 2013).

There, as here, the State’s expert chemist did not provide a principled or persuasive basis for the use of an elimination rate of .015%. Nor, in this case, did the State adequately explain the use of a standard 30 minutes to peak BAC figure. Thus the Court concludes that here it cannot and does not find that “ the witness has applied the principles and methods reliably to the facts of the case”. V.R.E. 702(3).

As in *Nugent*, the Court concludes that the use of these two assumptions is speculative, and that the State’s expert offered no “credible reason why her assumed elimination rate was reliable” as applied to any DWI defendant. *Nugent*, 2014 VT 4, ¶ 8. Indeed, the apparent position of the State remains that even though they cannot establish what percentage of the population benefits from using an assumed, standard elimination rate of .015%, nor a solid scientific basis for using an assumed time to peak BAC of 30 minutes, these assumptions nevertheless must be accepted for Ms. Malshuk and all cases requiring relation-back evidence, because they are fair to the “majority” of DWI suspects.

Something more precise and more scientifically grounded is required to prove BAC at the time of operation beyond a reasonable doubt. As noted by Judge Teachout, if elimination rates actually fall along a range or “spectrum” of values, what is the scientific basis in a particular Defendant’s case for choosing .015%? In reality, the research clearly shows a range of elimination rates from .010% to .020% and higher. Simply asserting that .015% is beneficial to most suspects lacks the required precision to support a criminal conviction, as the finder of fact must base its decision on reliable and scientifically accepted evidence.

When asked, Ms. Bolduc testified that expressing a relation-back figure by using the scientifically accepted range of elimination rates would be “confusing” to the jury. Yet she failed to explain how the use of a range, which would result in the possible BAC at time of operation also being expressed as a range, would be in any way difficult to understand. Finally, while the evidence clearly shows that there is no practical way to measure an individual DWI suspect’s elimination rate in the field, there was nevertheless no explanation as to why Vermont simply does not adopt the most favorable elimination rate shown in the overwhelming number of studies, e.g., .010%.¹⁴

Equally problematic is the assumed time to reach peak BAC. Scientific research on that point shows that it can take between 8 and 138 minutes for a person to reach peak BAC after drinking stops. Yet in many DWI cases there is insufficient evidence adduced during the investigation to enable an educated guess about when that actually happens. Nor is there any practical way to measure this in the field. The evidence in this case did not establish to a reasonable degree of scientific certainty why, when the research shows such a variation, Vermont has decided to adopt a hard-and-fast rule of 30 minutes to peak BAC.

Without question Ms. Bolduc is a highly trained, deeply experienced, and competent scientist. The challenge here is not her, or Ms. Conte’s, qualifications as experts. Rather, the

¹⁴ As recommended by A.W. Jones. See Exhibit E, at 12, ¶ 6.4.

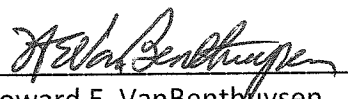
missing link is whether the expert's opinions and conclusions reliably flow from the facts known to them and under the methodology used. *Estate of George v. Vermont League of Cities and Towns*, 2010 VT 1, ¶ 15, 187 Vt. 229. While testimony relating back a test result to a BAC at the time of operation is clearly relevant evidence, the Court cannot find, on this showing by the State, that the conclusions are reliably based on sufficient supporting evidence. Rather, there appears to be no principled basis for the assumptions made: that use of a .015% elimination rate, and that a 30 minute time to peak benefits most people. While the use of these two assumptions *may* benefit most DWI suspects, there is no proven scientifically reliable basis to select either figure.

It is not enough under a reasonable doubt standard to simply assure the operator that, without actually knowing his elimination rate, for example, he probably benefits from the use of the assumed rate of .015%. In fact this may not at all be true, and he might be in the sizeable minority of operators who do *not* benefit from such a rate, and whose BAC is greatly overstated as a result. Under those circumstances the trier of fact would be misled as to that Defendant, by unreliable evidence. We do not allow criminal defendants to be convicted based on evidence that is probably true.

In light of the uncontested facts that the specific elimination rate of a particular DWI defendant cannot be measured, computed, or quantified in field processing, it is incumbent on the proponent of the evidence to show precisely how and why the assumptions selected are fair and reliable as to a particular DWI Defendant. See *State v. Scott*, 2013 VT 103, ¶ 17. There was no explanation from the State on that point, and no evidence as to why the *most* beneficial assumptions are not used, e.g. an elimination rate of .010%,¹⁵ and a time to peak figure within the literature that is most beneficial to a majority of the population, e.g., say 95%.¹⁶ Finally, there was no showing that expressing the related back BAC based on the scientifically accepted ranges would be difficult or confusing to the finder of fact.¹⁷ Here, as in *Nugent*, "the expert offered no credible reason why her assumed elimination rate was reliable as applied to Defendant." *State v. Nugent*, 2014 VT 4, ¶10.

Accordingly, and for all of the foregoing reasons, the Motion to exclude the relation back testimony *as proffered* is GRANTED in all cases.

So ordered at Newport, Orleans County, Vermont this 25th day of April, 2016.


Howard E. VanBenthuyzen
Superior Judge

¹⁵ Jones advocates for using such calculations to an 85% or 99% confidence interval. Exhibit H, A. W. Jones, *Garriott's Medical-Legal Aspects of Alcohol*, ch. 3, at 127.

¹⁶ Jones actually cautions against using retrograde extrapolation (relation back) in criminal contexts, describing those attempts—usually based on a single sample—as a “dubious practice owing to the many variables and unknowns involved.” He further notes that “it is not advisable to testify in court about the pharmacokinetics of ethanol (e.g. retrograde extrapolation) and perform Widmark calculations based on a . . . breath alcohol test.” Exhibit H (to the Motion), A.W. Jones, *Biochemical and Physiological Research on the Disposition and Fate of Ethanol in the body*, Garriotts, 127 (6th ed.).

¹⁷ Exhibit E, A.W. Jones, *supra* note 5, at 16.

Presiding

Cc: Parties

Greg Nagourney, Esq., Deputy States Attorney (Specially assigned)

STATE OF VERMONT

SUPERIOR COURT
Orleans Unit

CRIMINAL DIVISION
Docket No. 155-4-15 Oscr

State of Vermont

v.

Ronda Malshuk,
Defendant

ORDER

APPENDIX 1: List of affected cases

The following cases having been joined to State v. Malshuk for the purposes of deciding the relation back Motions, the Motions to Exclude Relation Back evidence as offered are granted:

State v. Manzi, 499-9-15 Oscr
State v. Simino, 646-12-15 Oscr
State v. Longto, 82-2-15 Oscr
State v. Meunier, 584-11-15 Oscr
State v. Ingalls, 484-9-15 Oscr
State v. Garneau, 100-3-16 Oscr
State v. Buckland, 61-2-16 Oscr

And those listed on pages 2 and 3 attached hereto.

So Ordered at Newport, Orleans County, Vermont this 25th day of April, 2016 and

Electronically signed on April 25, 2016 at 08:39 AM pursuant to V.R.E.F. 7(d).



Howard E. VanBenthuyzen
Superior Court Judge

VERMONT SUPERIOR COURT
ORLEANS CRIMINAL DIVISION
Court Calendar for 01/20/2016

Honorable H. E. VanBenthuyzen - Court Room 1 - 01/20/2016

01:15 MOTION IN LIMINE: RELATION BACK EVIDENCE ADMISSIBLE

Atty Jourdan

| | | |
|-------------------------------|--|---------------------------|
| State v. Adam Staszkiwicz | | (M. Donnelly; J. Jourdan) |
| 75-2-15 Oscr Ct. 1 | DUI #1 GREATER THAN LEGAL LIMIT | |
| 75-2-15 Oscr Ct. 2 | DUI #1-INFLUENCE | |
| State v. Christopher McCarthy | | (M. Donnelly; J. Jourdan) |
| 156-4-15 Oscr Ct. 1 | DUI #2-INFLUENCE | |
| State v. Tyler Prue | | (M. Donnelly; J. Jourdan) |
| 206-5-15 Oscr Ct. 1 | DUI #1 GREATER THAN LEGAL LIMIT | |
| 206-5-15 Oscr Ct. 2 | DUI #1-INFLUENCE | |
| State v. Philip Prangle S | | (M. Donnelly; J. Jourdan) |
| 267-6-15 Oscr Ct. 1 | DUI #2-INFLUENCE | |
| 267-6-15 Oscr Ct. 2 | VEHICLE OPERATION-LICENSE SUSPENDED #1 F | |
| State v. Steven Girard | | (M. Donnelly; J. Jourdan) |
| 318-6-15 Oscr Ct. 1 | DUI #1-INFLUENCE | |
| State v. Rhonda Lalonde | | (M. Donnelly; J. Jourdan) |
| 320-6-15 Oscr Ct. 1 | DUI #2 GREATER THAN LEGAL LIMIT | |
| 320-6-15 Oscr Ct. 2 | DUI #2-INFLUENCE | |
| State v. Roger Tetrault | | (M. Donnelly; J. Jourdan) |
| 325-7-15 Oscr Ct. 1 | DUI #1 GREATER THAN LEGAL LIMIT | |
| 325-7-15 Oscr Ct. 2 | DUI #1-INFLUENCE | |
| State v. Christi Martin | | (M. Donnelly; J. Jourdan) |
| 336-7-15 Oscr Ct. 1 | DUI #1-INFLUENCE | |
| 336-7-15 Oscr Ct. 2 | DUI #1 GREATER THAN LEGAL LIMIT | |
| State v. Jeffrey Waterman | | (M. Donnelly; J. Jourdan) |
| 340-7-15 Oscr Ct. 1 | DUI #2 GREATER THAN LEGAL LIMIT | |
| 340-7-15 Oscr Ct. 2 | DUI #2-INFLUENCE | |
| State v. Eric Trombly | | (M. Donnelly; J. Jourdan) |
| 342-7-15 Oscr Ct. 1 | DUI #1 GREATER THAN LEGAL LIMIT | |
| 342-7-15 Oscr Ct. 2 | DUI #1-INFLUENCE | |
| 342-7-15 Oscr Ct. 3 | VEHICLE OPERATION-RECKLESS OR GROSS NEGL | |
| 342-7-15 Oscr Ct. 4 | CRUELTY-CHILD LESS THAN 10 YRS | |
| State v. Patricia R. Griffith | | (M. Donnelly; J. Jourdan) |
| 393-8-15 Oscr Ct. 1 | DUI #1 GREATER THAN LEGAL LIMIT | |
| 393-8-15 Oscr Ct. 2 | DUI #1-INFLUENCE | |
| State v. Steven Tanguay | | (M. Donnelly; J. Jourdan) |
| 458-9-15 Oscr Ct. 1 | DUI #1-INFLUENCE | |
| 458-9-15 Oscr Ct. 2 | DUI #1 GREATER THAN LEGAL LIMIT | |

Atty Sleigh

State v. Daniel Scott (M. Donnelly; D. Sleigh)
213-5-15 Oscr Ct. 1 DUI #2 GREATER THAN LEGAL LIMIT
213-5-15 Oscr Ct. 2 DUI #2-INFLUENCE

State v. Samantha Lemay-Houle (M. Donnelly; D. Sleigh)
101-3-15 Oscr Ct. 1 DUI #1 GREATER THAN LEGAL LIMIT
101-3-15 Oscr Ct. 2 DUI #1-INFLUENCE

State v. Patrick Austin (M. Donnelly; D. Sleigh)
151-4-15 Oscr Ct. 1 DUI #1-INFLUENCE

State v. Ronda Malshuk (M. Donnelly; D. Sleigh)
155-4-15 Oscr Ct. 1 DUI #1 GREATER THAN LEGAL LIMIT
155-4-15 Oscr Ct. 2 DUI #1-INFLUENCE

State v. Lawrence Landess (M. Donnelly; D. Sleigh)
476-9-15 Oscr Ct. 1 DUI #1 GREATER THAN LEGAL LIMIT
476-9-15 Oscr Ct. 2 DUI #1-INFLUENCE

Atty Hatt

State v. Ryan Simino (M. Donnelly; K. Hatt)
646-12-15 Oscr Ct. 1 DUI #1 GREATER THAN LEGAL LIMIT
646-12-15 Oscr Ct. 2 DUI #1-INFLUENCE