

Deadline of Submission of Comments: 6-Feb-23  
Document Number: ANSI/ASB Std 122  
Document Title: Best Practice Recommendation for Performing Alcohol Calculations in Forensic Toxicology

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
136	Title	E	ASB 037 Best Practice Recommendation is titled "Guidelines for..."	Change Title to be consistent with Best Practice Recommendation ASB 037 - "Guidelines for Performing Alcohol Calculations in Forensic Toxicology"	REJECT: ASB now has "Guideline" as another document type, that was not an option when BPR 037 was developed. The title and document type will remain consistent as per the ASB Manual.
46	Throughout	E	Inconsistent citation style (some are numbers with square brackets, others are Author, year or numbers with round brackets)	Make citation style consistent	ACCEPT: Citations updated for consistency
133	Entire document	E	The document is so large and references are not linked, making it cumbersome to review the reference for a particular text	Consider using footnotes to have referenced studies on the same page as the text that references them.	REJECT: The proposed resolution would be inconsistent with the ASB Manual F.3.3 Use footnotes to reference text copied from another document.
11	Foreward	E	California is a time of driving state. ANY delay between incident and blood draw (doesn't have to be long at all) will result in the expert being asked what the BAC is at the time of incident. I have been asked to retrograde 15-20 minutes on the stand in many previous cases.	Change language from " <i>For example, in a situation where there is a long delay between the incident and the blood draw, an expert may be asked...</i> " to " <i>For example, in a situation where there is a delay between the incident and the blood draw, an expert may be asked...</i> "	ACCEPT: Removed the word "long"
12	Foreward	E	"The range does not put any greater likelihood that the subject was at the high or low end of the range, nor that they were likely in the middle." In California, I am asked to provide opinions on ranges that I apply to my calculations based on population averages and commonalities seen within the published literature. I am always dealing with a hypothetical person that I am asked to make certain assumptions on, be that absorption times, elimination rates, volume of distribution/total body water, etc. I am NOT asked to provide a range for specific defendant X. I clearly state that the range I provide would be applicable, allowing for normal/near-normal distributions of data where the most common numbers within that range are closer to the middle of the range than the extremes. Blanketly stating that ranges are essentially rectangular distributions is not appropriate depending on the context with which those ranges are discussed and interpreted by the expert. It is inappropriate for this statement to be in the document as it is addressing an opinion of the calculated range, which previous comment adjudication has indicated is not the scope or purpose of the document.	Remove this sentence.	ACCEPT WITH MODIFICATION: The sentence cited was removed. A new sentence was added to clarify the reason for not applying a population average to a specific case/individual.
44	Foreward	E	Use of the word "bias" is confusing here as it is also used as a term in alcohol measurement	Add "cognitive" before "bias"	ACCEPT: Added "cognitive" before "bias"
74	Foreward	E	In the first sentence of the foreword, specify that the calculations described are related to alcohol interpretation rather than alcohol in general.	insert "interpretation" after "alcohol (ethanol)"	REJECT: The focus of the document is on the calculations, rather than the interpretation resulting from those calculations. Further clarification was added to the scope.
75	Foreward	E	In the second sentence, this practice is intended to mitigate bias; it would be hard for adherence to not be successful at this.	replace "may" with "is intended to"	ACCEPT: Replaced "may" with "is intended to"
76	Foreward	E	The foreword addresses in the second paragraph the unknown degrees of confidence. Discussion of measurement uncertainty confuses the reader this early in the document. Later discussion in the document provides the needed information such that less is needed in the foreword. The suggested language clarifies that both the accuracy and the level of confidence may be unknown.	remove the entire sentence starting with "Many forensic blood alcohol..."; AND replace "unknown degrees of accuracy" with "unknown accuracy and unknown levels of confidence"	REJECT: However, the section was reworded for simplicity and clarification
77	Foreward	E	The first sentence of the third paragraph - increase formality by removing the "/".	replace "may/may not" with "may or may not"	ACCEPT: Replaced "/" with "or"
78	Foreward	E / T	In the third sentence of the third paragraph - increase clarity and formality by re-phrasing "the science does not support". Specifically, there exists peer-reviewed literature suggesting that when certain case circumstances are provided (e.g., drinking history or ethnicity of an individual, liver disease state), improved estimates are available. Nonetheless, while a single value only should not be used, a single value accompanied with a range can provide significantly more value than a range only. Subsequent changes in the document would also need updating to reflect that a single value accompanied with a range WITH clearly stated assumptions is allowed. Sections include 4.1.3.2, 5.4.4, and examples.	remove "the science does not support!" and append "shall not be provided in isolation"; AND insert after "Rather", ", along with a single value, if used, an estimated range shall be provided..."	REJECT: The Foreword explains why the consensus body feels that a single value (even if accompanied by a range) is not appropriate. The impact of specific circumstances like liver disease state may be appropriate for subsequent expert opinion testimony based on the calculations.
79	Foreward	E	In the third sentence of the fourth paragraph - uncertainty along with level of confidence has been demonstrated in literature.	add "and level of confidence" after "associated uncertainty"	ACCEPT: Added "and level of confidence"
80	Foreward	E	In the last sentence of the fourth paragraph - increase formality and clarity.	remove "the" before "peer reviewed" and replace "all the parameters" with "additional parameters"	ACCEPT: Removed "the", removed "all the"

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
120	Foreword	T	The statement "science does not support being able to provide a single value..... The range does not put any greater likelihood that the subject was at the high or low end of the range, nor that they were likely in the middle". For any individual plucked from the population there is a higher likelihood that their elimination rate would be closer to the average concentration than extreme ends of 0.025 and 0.010, would it not? I completely agree that a range is better than a single value of course but, would there not be value to the court to provide an indication of what the subject's BAC may have been if they had an average elimination rate (e.g. 0.015%/hr) as well as providing the upper and lower (extreme) ends of the normal range? I think that a statement along the lines of: the probable concentration would be x% alcohol, however this value cannot be determined with certainty, so actual concentration may vary between Y and Z" is reasonable.	suggest insert: An estimation using a population average elimination rate may be included provided it is explained in the report that it isn't possible to ascertain where this individual's true bac sits within the range at the time of the incident.	REJECT: The Foreword explains why the consensus body feels that a single value (even if accompanied by a range) is not appropriate.
58	Foreword and overall presentation	E	Very well written and clear scope that balances purpose and limitations. All comments below are minor as I found the document to be clear and unambiguous in the factors to be considered as well as the provided example calculations.	none	No response needed. Thank you for the feedback.
125	Forward	E	"replicate analyses and are reported with an estimation of measurement uncertainty" The terminology used for MU has been updated. For blood ethanol analysis the MU will be routinely determined through an evaluation, not an estimation. However, this phrase is not needed in the text and should be removed.	remove "an estimation of"	ACCEPT: Removed "an estimation of"
13	Scope	E	The comment adjudication from the original draft documents focused quite a bit on what the document DOES address rather than what the document DOES NOT address in relationship to the concerns and commentary from the feedback given to the committee on many document specifics. Specifically, the comments were explicit that the document addresses how to perform the calculations but NOT how to interpret them or provide opinions on them.	Suggest adding statements to the scope to clarify that the document provides recommendations focused on the service request of performing calculations and does not specifically address how an expert would testify to and provide opinions on the interpretation of the calculations or attempt to address the totality of the circumstances that may form an expert's opinion in an individual case	ACCEPT: Clarification added to scope
81	Scope	E	While alcohol is commonly used as specifically ethanol or drinking alcohol (rather than methanol, isopropanol, etc.), for a national standard, consider using Ethanol in place of Alcohol in all instances, including the title of the document and explaining this in the foreword.	replace "Alcohol" with "Ethanol" in the title; replace "alcohol (ethanol)" with "ethanol (drinking alcohol)" or "ethanol (alcohol)"	REJECT: There are a variety of stakeholders for the document, and "alcohol (ethanol)" is considered the most appropriate by the consensus body
82	Scope	E	"other typical situations" is vague.	Replace "other typical situations" with those described in the document.	REJECT: Replaced "typical situations" with "scenarios", however, the consensus body did not feel limiting it to just the examples provided in the document was appropriate since we cannot anticipate every scenario that might be encountered
83	Scope	E	This Best Practice document is (understandably) written with DUI casework in mind. Subsequently, many assumptions or estimates in this document lean towards being conservative for the defendant. Again, understandably. However, this use of this document in other casework, e.g., DFC, will often lead to benefits going towards prosecution. We have first hand accounts of where using this document's criteria for DFC casework may benefit the prosecution.	Suggest including a sentence to state the underlining DUI intent for this document, that it provides concessions to the defendant, and may not be suitable for all casework.	REJECT: The document represents a neutral presentation based on the scientific literature, and is not meant solely for DUI casework. Since DUI is the most common application, the Appendix does focus on that type of casework. The results of the calculations may ultimately benefit one side or another, but performing the calculations in a standardized manner will reduce variability intended to benefit one side.
56	Scope	E	minimum drinks consumed	the number of drinks associated with an alcohol concentration	REJECT: Minimum drinks consumed may involve more than just the suggested rewording
32	2	T	Make the citations complete	Make the citations complete	REJECT: Normative references were removed
126	2	E	Double check formatting of references. Is there some reason that the last name is first for the first author and the order is reversed for the other authors (P. Maskel, G. Cooper)? Also, should it not be A.W. Jones?	Correct formatting of references as necessary	ACCEPT: The formatting of references was made consistent
132	2	T	These references are not required for application of this document. Through the document and appendices, sufficient information is included without the need for these references. Also, not all calculations (if the Widmark A=prc formula is not used) require use of these references.	Remove normative references	ACCEPT: These references were moved to Annex B
65	4.1	T	rho is mentioned in section 4.1.3.1 but isn't mentioned anywhere else in this document.	Change Vd to Vd/rho in 4.1.3.2 and/or 4.1.3.3. Alternatively, define rho so it's inclusive with Vd.	ACCEPT: Rho was listed as synonymous with Vd.
5	4.1.2	T	Expand Absorption background to include social drinking scenario studies due to a majority of casework involving drinking scenarios from a person at a bar or party consuming alcohol over an extended period of time.	Background Info: Winek et al. 1996 FSI: In social drinking scenarios (>30 mins) in all subjects, the BAC by the end of last drink was already, at least, 80% of the Cmax. Another study: A.W. Jones et al 2006 Can. Soc. FSI: After 5-10 hrs of social drinking, average time to Cmax after last drink was 2 min with the range (-56 ming to 50 mins) Third study: Garnet et al 2000 Can. Soc. FSI: 3 hrs social drinking, average time to Cmax was 12 mins (4-22 mins). The avg. increase in BAC after last drink was 0.005 (0-0.022 g/100mL) Resolution: Insert sentence after "...it can take up to 2 hours for complete absorption after the last drink" to indicate something such as "However, in social drinking scenarios, >30 minutes of drinking, BAC Cmax can be reached near the time of last drink, or within an hour after. (Cite papers above)	REJECT: All of 4.1 is intended to be an elementary overview. There are a number of variables, including social drinking scenarios, that can impact absorption. The section as written incorporates those. Also, the focus is on the time to complete absorption, not Cmax.
21	4.1.2	T	Studies support that absorption can take longer than 2 hours, some showing up to 4 hours. In addition, no mention of a possible absorption plateau is mentioned	Expand range and include references. IN addition, discuss plateau .	REJECT: The consensus body considers 2 hours an appropriate range based on the majority of the published literature. The commenter did not provide any references to contradict this position. Further, all of 4.1 is intended to be an elementary overview. There are numerous variables to alcohol curves that are not expanded on in the discussion (e.g. plateaus, steeping effect).
72	4.1.2		blood stream one word?	bloodstream, The meaning of BLOODSTREAM is the flowing blood in a circulatory system, Merriam-Webster	ACCEPT: Made one word

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
84	4.1.2	E	General rates of absorption are described here, not specific to any one circumstance or individual.	Replace "the rate of absorption" with "rates of absorption"	ACCEPT WITH MODIFICATION: Updated "the rate of absorption" to "absorption rates"
85	4.1.2	E	As a best practice document, more authoritative language can be used.	replace "Studies support that it" with "It"	REJECT: The consensus body preferred the existing language.
127	4.1.2	T	"...it can take up to 2 hours for complete absorption" These studies support that it can take up to 2 hours to reach the peak alcohol concentration (Cmax) not "complete absorption" as is used in this document	Check phrasing - it would seem that peak concentration should be used instead of complete absorption	REJECT: The consensus body feels the cited literature supports the post absorptive wording.
14	4.1.2 and 4.1.3.1	E	These two paragraphs suggest that retrograde extrapolation calculations cannot be done inside 2 hours because the subject may not be post-absorptive. The literature supports that it's a fairly safe assumption that the vast majority of drivers are no longer in the absorptive state at time of incident. Levine and Smialek, Status of alcohol absorption in drinking drivers killed in traffic accidents, JFS 2000, 45(1):3-6 address this and cites Jones, Neuteboom and Jones (also cited in this document- reference #21); Jones, and Gullberg and McElroy in references 1-4 of the paper. Shajani and Dinn, Blood Alcohol Concentrations Reached in Human Subjects After Consumption of Alcoholic Beverages in a Social Setting, Can. Soc. of For. Sci. J. 1985, 18(1):38-48 also addressed the application of retrograde extrapolation up to 30 minutes from the cessation of drinking under social drinking conditions and found that applying a range of elimination resulted in an appropriate calculation of estimated BAC. Only when they retrograded to within 30 minutes of the last drink did they need to account for unabsorbed alcohol by removing standard drink values. The Orange County Crime Laboratory also presented their data from controlled drinking studies of over 250 drinkers and over 1000 data points at the virtual CAC meeting last year, applying the same approach as Shajani and Dinn and came to similar conclusions. Breen et al., The Effect of a 'One for the Road' Drink of Hard Liquor, Beer or Wine on Peak Breath Alcohol Concentration in a Social Drinking Environment with Food Consumption, Med. Sci. Law (1998) also demonstrated that the effect of one last drink was minimal in terms of impacting a time frame in which simple retrograde calculations were feasible. 2 hours is not a reasonable cut-off point for doing straight retrograde calculations, especially when an elimination rate range of 0.010-0.025, which should encompass a majority of the population, is used.	Suggest changing the wording here so as not to imply calculations inside 2 hours are not applicable. Times to complete or full absorption, which do not affect peak, are irrelevant. As long as the hypothetical person is not in the absorptive phase at the time of driving is the relevant matter in these types of cases in California. If that person is post peak, they are not in the absorptive phase of metabolism and their BAC is declining. While a subject may still be absorbing alcohol post peak, if their BAC is declining and the elimination is vastly overshadowing any absorption, it should not matter if the subject is in the post absorptive state. The focus should be on when the subject's BAC is declining (i.e. post peak).	REJECT: The document does not prevent calculations within 2 hours, Section 5.4.6 addresses potentially unabsorbed alcohol, and Annex A.5 provides an example of how to apply that.
86	4.1.3.1	E	"rho" is dropped in here as an undefined term/variable. It is inferred following this sentence that it is distinct from Vd and TBW, but unclear what it actually is.	define or elaborate all three terms, Vd, TBW and rho, if the distinction is intentional and/or significant	ACCEPT WITH MODIFICATION: The distinction between Vd and rho was removed, and clarification added.
45	4.3.1.1 (assumed to be 4.1.3.1)	E	rho not defined	Add a definition here	ACCEPT WITH MODIFICATION: The distinction between Vd and rho was removed, and clarification added.
129	4.1.3.2, 5.2.1, now 5.2.2	T	"0.45 L/kg to 0.81 L/kg" This range is not listed in the referenced article. Where did this come from?	Check reference for specified range and revise as necessary.	REJECT: The range was updated based on a more recent publication (reference #17)
139	4.1.3.2, 5.2.1, now 5.2.2	T	"0.45 L/kg to 0.81 L/kg" Why would the authors not have different ranges for men and women? Volumes of research have demonstrated there are distinct differences based on gender.	Revise to include one range for women and one for men	ACCEPT: The range was updated to include options for male and female based on a recent publication (reference #17)
130	4.1.3.2, 5.2.1, now 5.2.2	T	"0.45 L/kg to 0.81 L/kg" Why would the authors use extreme ends based on one reference for this parameter when for elimination rate in 4.1.3.2 it is based on multiple references and a reasonable/consensus range is used rather than the min and max reported?	Include more references (body of literature) and base the Vd range on the entire body of literature - not including outliers at the extreme ends, similar to treatment for elimination rate. All ranges should be treated the same.	REJECT: The reference (#17) was updated to reflect the analysis of a comprehensive data set. The range from this reference is consistent with other publications, and uses the 95th percentile (not the extreme outliers). This is consistent with Jones' approach referenced for elimination rate range.
66	4.1.3.3	T	In regards to individuals in the transgendered community: a fixed Vd range is implied as the recommended factors to use then there should be a stated recommendation range.	Include a defined recommended Vd range plus citation.	REJECT: The wording was updated to not include a specific course of action, as further research in this area is still needed.
88	4.1.3.3	E	Increase clarity.	remove "apparent" and add "age for males" to the list of known anthropometric parameters in the first sentence; replace "estimate the variance" with "the respective variances"; remove the last sentence starting with "Individuals performing" as it is redundant by these references being normative	ACCEPT: Removed "apparent", added "age (males)", replaced "estimate the variance" with "the respective variances". The last sentence was removed since these references were moved to Annex B.
128	4.1.3.3	T	"Individuals performing calculations outlined in this document shall have a foundational understanding of the two normative references" Is this necessary for all calculations? Why would this be required if not using the Widmark formula (when just performing a retrograde extrapolation)?	Too absolute a statement. Revise to account for those calculations that do not involve the Widmark formula. Consider removing from normative references as they are not required to be used for application of all parts of the document, only certain options/parts.	ACCEPT WITH MODIFICATION: The normative references were moved to informative references. The statement is within the Distribution section and directly related to involvement of the Widmark formula or not.
2	4.1.3.2	Word change	"inappropriate"	"not recommended"	REJECT: The consensus body prefers the stronger current wording.
6	4.1.3.2	T	Specify Vd range for males and females	Change "0.45 L/kg to 0.81 L/kg" to "at a 95% CI the Vd for males is 0.55 to 0.83 L/kg and females is 0.43 to 0.77 L/kg" -Found in Maskell 2019 FSI pg 127 *This will also indicate that this Vd range is a large range (95% CI) and will be helpful when describing in court	ACCEPT WITH MODIFICATION: The range was updated to include options for male and female based on a recent publication (reference #17)
24	4.1.3.2	E	Fix numbering. This has multiple matching numbers		ACCEPT: Numbering corrected

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
87	4.1.3.2	E	Increase clarity.	replace "If a fixed value is used for Vd" with "When a fixed Vd is used for estimations involving alcohol in an individual"; remove "factor for a" in the second sentence	ACCEPT WITH MODIFICATION: The section was reworded, "factor for a" was removed.
133	4.1.3.2	T	It is not clear from the cited reference or the other normative reference where the suggested range comes from. The specific range cannot be found in either reference.	Either correct cited reference or provide additional language to support stated range.	ACCEPT WITH MODIFICATION: The range was updated based on a recent publication (reference #17)
22	4.1.3.2 Distribution	T	The range of 0.45 L/kg to 0.81 L/kg, while it covers people that may exist, it is larger than the population that is seen in DUI arrests, in my experience.	Acknowledge, that while this may be the range, the vast majority of the drinking and driving population falls in a much narrower range or AT LEAST, show the height / weight/ sex/ age populations parameters that would be necessary to hit a 0.45 or a 0.81 so that the extreme numbers that may exist in the world but that do not exist in court can be excluded	REJECT: The ranges are based on the 95th percentile as outlined in the updated reference (#17). The ranges selected are not focused on a subset of the population.
89	4.1.3 (the second one; Elimination)	E	Correct numbering of this section and subsequent numbered list (4.1.3.1 to 4.1.3.3)	correct 4.1.3 Elimination and subsequent numbered list to "4.1.4", etc.	ACCEPT: Numbering corrected
3	4.1.3 Elimination	Editorial	The number is incorrect for the "Elimination" section.	Correct the number to be 4.1.4	ACCEPT: Numbering corrected
130	4.1.3 Elimination	E	Both Absorption and Elimination are listed as 4.1.3	Re-number Elimination section to remove duplicative numbers	ACCEPT: Numbering corrected
52	4.1.3.1 now 4.1.4.1		section states that linear elimination cannot be used unless post-absorptive. Yet section 5.4.6.4 allows use of elimination range when effect of unabsorbed alcohol is subtracted. Linear elimination applies (above 0.02 g/100 mL) regardless of absorptive state. This section should clarify that retrograde calculations solely utilizing elimination can only be done if post-absorptive. See 5.4.6.4 for use when unabsorbed alcohol may exist.	reword	ACCEPT: Sentence removed from 4.1.4.1 and new 4.1.4.4 added for additional clarification
131	4.1.3.1 Elimination	T	"The linear rate can only be applied when elimination is the only pharmacokinetic parameter occurring, in other words, the subject is post absorptive. While the AC may be declining after the subject reaches their peak AC (post peak), the linear rate is not applicable until the post absorptive state." Is this the authors attempt to address a potential plateau? Post peak and post absorptive are routinely used interchangeably - even in research used to evaluate elimination rates. What marks the post absorptive state from post peak? How is this determined?	Pharmacokinetics are a dynamic process. It is incorrect to state that post absorptive is when elimination is the only parameter occurring - rather it is the dominant parameter (small amounts may still be absorbing, although negligible). Language is not accurate and should be deleted or revised. Is it possible to ever determine when someone is post-absorptive as the authors define it? Cited references only determine when Cmax is reached (peak).	REJECT: That specific language was reworded, but still uses the phrase "post-absorptive" (moved from 4.1.4.1 to 4.1.4.4). This is meant to indicate when the elimination rate is linear.
90	4.1.3.1 (the second one; Elimination)	E	Ethanol is removed through first pass metabolism AND some is excreted unchanged.	replace "or" with "and"	REJECT: The sentence refers to two different processes for removing alcohol - metabolism or excretion.
91	4.1.3.1 (the second one; Elimination)	E	The comment "in other words" should be prefaced with a semicolon rather than a comma.	replace ", in other words" with "; in other words" or "(i.e., the subject...)"	REJECT: Sentence was removed
92	4.1.3.1 (the second one; Elimination)	E	Increase formality in the last sentence	remove "the subject reaches their" and "(post peak)" to read "While the AC may be declining after peak AC, the linear rate is..."	REJECT: Sentence was removed
23	4.1.3.2 Elimination		Concerning - An elimination rate range of 0.010 g/dL/hour to 0.025 g/dL/hour encompasses the majority of the population regardless of age, sex, ethnicity, and drinking experience [8, 10, 11, 12, 13, 21, 22, 25, 31].	Based on Jones, AW, in Evidence-based survey of the elimination rates of ethanol from blood with applications in forensic casework: the people that would have elimination rates as low as 10 of 0.010 are "Malnourished individuals or people eating low protein diets. Liver cirrhosis with portal hypertension. Administration of 4-methyl pyrazole (fomepizole) a drug that competes with ethanol for binding sites on hepatic alcohol dehydrogenase" Again, those people do not normally appear in court Use a minimum elimination rate of 0.012 grams ethanol/100 cc's blood/Hr. unless there is evidence of Malnourished individuals or people eating low protein diets. Liver cirrhosis with portal hypertension. Administration of 4-methyl pyrazole (fomepizole) a drug that competes with ethanol for binding sites on hepatic alcohol dehydrogenase	REJECT: The consensus body agrees with the current range which is consistent with Jones' recommendation and other literature. The document is not targeting a subset of the population.
38	4.1.3.3, 5.1.2, 5.4.3, 5.4.4, 5.4.5, 5.4.6, 5.4.6.3	E	Given that the document is intended to be a best practices guiding document, the use of the word "shall" throughout the document is not appropriate in this context. Use of mandatory language such as "shall" conflicts with the spirit of the document in its current state, as the practices are being recommended and ARE NOT required.	Remove the "shall" wording and replace with "recommended"	REJECT: The document is a best practice recommendation, and not a standard, however the use of "shall" versus "should" is intended to differentiate the significance of some recommendations over others.

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
137	4.1.3.3, 5.1.2, 5.4.3, 5.4.4, 5.4.5, 5.4.6, 5.4.6.3	T	"shall" should not be used in a best practice recommendation and was not used in ASB 037	Revise "shall" to "should" throughout the document (see listed sections)	REJECT: The document is a best practice recommendation, and not a standard, however the use of "shall" versus "should" is intended to differentiate the significance of some recommendations over others.
47	4.2.1	T	"Experts should be clear as to the information they rely upon, and the assumptions they make." This sentence is ambiguous - do you mean clear in their head/thought processes or clear in the report?	Experts shall be clear in their report as to the information they rely upon, and the assumptions they make.	ACCEPT WITH MODIFICATION: The sentence was revised to refer to any communication, not specifically a report.
25	4.3.1	T	Most Lit has different ranges for serum and plasma	Include separate ranges and averages, as well.	REJECT: The difference between serum and plasma is considered insignificant and is supported by the reference.
53	4.3.1	T	Range 1.04 to 1.26 is the entire spread of data obtained in Charlebois's 1996 article (J. of Anal Tox). The 1.06 to 1.22 range (95% confidence) is a better range to use.	Change range to 1.06 to 1.22	ACCEPT WITH MODIFICATION: The 95% range in the Jones/Tillson article (#14) was used to update the recommended range.
59	4.3.1	T/E	Recent literature Oct 2022 regarding distribution ratios ethanol between blood/plasma/serum/commentary-review article	for consideration only--still supports the range listed here	ACCEPT: The reference for serum/plasma conversion was updated based on this reference.
15	4.3.1 and 5.1.2	E	A recent publication from JFS by Jones and Tillson (J. For. Sci. 2023; 68:9-21) further discussed the 1.04-1.26 range for converting serum/plasma to whole blood, focusing rather on using a static factor of 1.2 with which to convert to provide a conservative estimate. I recently had a case where I used the suggested range of 1.04-1.26 to convert a serum result. Once retrograde was applied back to the time of driving, the resulting range was so broad, it was admittedly comical.	Suggest adopting the 1.2 conversion factor suggested in the Jones/Tillson article, rather than a range.	ACCEPT WITH MODIFICATION: The 95% range in the Jones/Tillson article (#14) was used to update the recommended range. For consistency with the best practice recommendation's approach, a single value is not recommended.
132	4.3.1, 5.1.2	T	"Research supports a serum/plasma to blood ratio of 1.04 to 1.26 [6]" This topic is not sufficiently addressed to make a simple statement based on one study, taking the min and max observed.	Remove 4.3.1 or expand the topic to include more research. This should not be based on one solitary study. A German study referenced by A.W. Jones involved 833 subjects (see reference 11 of this document)	ACCEPT WITH MODIFICATION: The range was updated based on the recent Jones/Tillson publication (#14).
138	4.3.1, 5.1.2	T	"Research supports a serum/plasma to blood ratio of 1.04 to 1.26 [6]" This topic is not sufficiently addressed to make a simple statement based on one study, taking the min and max observed.	Remove 4.3.1 or expand the topic to include more research. This should not be based on one solitary study. A German study referenced by A.W. Jones involved 833 subjects (see reference 11 of this document)	ACCEPT WITH MODIFICATION: The range was updated based on the recent Jones/Tillson publication (#14).
131	4.3.1, 5.1.2	T	"Research supports a serum/plasma to blood ratio of 1.04 to 1.26 [6]" Why would the authors use extreme ends based on one reference for this parameter when for elimination rate in 4.1.3.2 it is based on multiple references and a reasonable/consensus range is used rather than the min and max reported?	Include more references (body of literature) and base the serum/plasma to blood ratio range on the entire body of literature - not including outliers at the extreme ends similar to treatment for elimination rate. All ranges should be treated the same.	ACCEPT WITH MODIFICATION: The 95% range in the Jones/Tillson article (#14) was used to update the recommended range.
16	4.3.2	E	In California, the per se level statute is defined in units of g/100mL of blood or g/210L of breath. Title 17 of the Code of Regulations explicitly allows for urine as a specimen if it is collected at least 20 minutes after voiding the bladder. It also requires that the results from these specimens be converted to a whole blood equivalent using a prescribed conversion factor. 4.3.2 would not allow extrapolation calculations in a TIME OF DRIVING state on a specimen of this type.	Suggest adding provisions to allow calculations to be done where statute requires, and to require the expert to frame them in the context of the variability that may exist in converting a urine alcohol to a blood alcohol	REJECT: A specimen may be acceptable for testing pursuant to a state regulation, but that does not necessarily make it appropriate to use for extrapolation.
48	4.3.2	E	Urine is an elimination product which is influenced by	Urine is an elimination product that is influenced by	REJECT: The sentence was modified and that clause is no longer included.
73	4.3.2		Does this preclude the estimation of a blood alcohol concentration being greater than 0.08% based on a urine alcohol concentration at high concentrations?	Reference Limits for Urine/Blood Ratios of Ethanol in Two Successive Voids from Drinking Drivers, A.W. Jones JAT Vol 26 September 2002	REJECT: The sentence precludes extrapolation, not the conversion of a urine testing result to an equivalent whole blood value.
93	4.3.2	E	Increase clarity.	replace "product which is influenced" with "product in which the AC is influenced"	ACCEPT WITH MODIFICATION: The sentence was modified to include AC for clarity.
94	4.4	E	Correct grammar in the first sentence.	replace "has" with "have"	ACCEPT: Replaced "has" with "have"
95	4.4	E	Clarify usage of verbs associated with uncertainty.	replace "determining" with "evaluating"	ACCEPT: Replaced "determining" with "evaluating"
26	4.5	T	While literature by the Federal Government has recommended that these values be used for research, the literature on consumption tends to show that the most common alcoholic beverages consumed in the US are Coors light, Budweiser Light, Miller Light and Budweiser regular, the light beers being about 4.1-4.2% v/v and the Budweiser regular being between 4.8 and 5%.	You can use standard drink definitions to include 12 ounces light beer 4.18%, 4 ounces 12.5% v/v table wine, and 1 ounce of 100 proof or 50%. Each contains approximately 14.8 ml ETOH or 11.78 grams ETOH. This gives you a standard drinks that is more representative of what is consumed in the US.	REJECT: Section 4 provides background information for the user and provides a US reference for a standard drink. However, it does not preclude a forensic service provider from defining a standard drink differently in their protocols. For example, some countries have defined this in regulations. It also allows for specific concentrations of a beverage when that information is available. However, the sentence was modified from "is" to "may be" to clarify.
96	4.6 and 4.7	E	As this document knowingly is not the authority on English/Metric conversions or Density of Alcohol, consider merging 4.6 and 4.7 and rename the header.	name the joint section "Use of English/Metric Units and Density of Alcohol"; add "The below conversions and definitions are to be utilized, when applicable."	REJECT: The consensus body did not see a need to modify the section, these are typical values widely used.

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
27	4.7	T	Density of ethanol as 0.789 g/ml	While it is the density at 20 degrees C or 68 degrees F, not much is done at 20 including production of alcoholic beverages, drinking of the beverages and the temperature in the body. At least, make sure to mention that density if temperature dependent and this density is at 20C.	REJECT: Not relevant to the application. Brewers and distillers take temperature into account when determining the alcoholic concentration of beverages.
28	5	T	See above 4.1.3.2 Distribution/Elimination	See above 4.1.3.2 Distribution/elimination	REJECT: Insufficient information provided to adjudicate the comment. Calculations in section 5 are consistent with recommendations in section 4.
123	5.1	T	In some (international) jurisdictions, legally reported BACs (from blood or breath) may already have an adjustment factor which subtracts MU or other amount to ensure the subject's BAC is not over estimated. The working group might consider whether the BPR specify that results should be used "as-provided" or not. In the least, Practitioners should be aware of any adjustments made to reported results that may have a bearing on their application in estimations	Suggest a clause eg "practitioners should actively seek to clarify the practices of BAC reporting laboratories or devices regarding adjustment of reported results for MU or other statistical factor, and consider how this affects any estimation or comparison	REJECT: Forensic service providers can address specifics like that within their protocols.
97	5.1.1	E	Increase clarity.	Revise this sentence to read "Either blood (g/dL) and breath (g/210L) test results can be used in the presented calculations."	REJECT: Wording was updated differently based on other comments
60	5.1.1 and 5.3.2	E	5.1.1: Calculations are valid for blood (g/dL) and breath (g/210L), but example 5.3.2 is the only one where AC has the breath units.	Suggest leaving all AC as g/dL in examples and just add a statement to 5.1.1 that while examples shown have AC as g/dL, applicable to breath as well.	ACCEPT: 5.1.1 was reworded and duplicate units were removed from 5.3.2
43	5.2.2.1, now 5.2.3.1	T	The formulas for calculating TBW as printed are not the same. In the formula for females a "-" is in front of the 2.097 and it should not be there. The "+" that follows 2.097 should be a "-" not a plus.	Remove the "minus" sign and replace the "plus" sign with a "minus"	REJECT: The formula was verified against the Watson reference, equation #7.
55	5.2.2.1, now 5.2.3.1	E	No source citation is given.	Add a source citation for the numbers used.	ACCEPT WITH MODIFICATION: The reference (Watson) is cited in 4.1.3.3. Reference to the respective authors was added to 5.2.3.1 and 5.2.3.2 for consistency and clarity.
67	5.3.1	T	Variations of the formula are mentioned but never defined. Consider adding the modified Widmark's formula to correct for alcohol concentration reported in g%, ABV (instead of dose), and weight in pounds instead of kilograms.	Include and/or mention modified Widmark as an option for analyst to use. $BAC = (0.051)(\# \text{ floz})(ABV)/(\text{lbs})(\rho)$	REJECT: Users of the best practice recommendation can use variations that fit their need. Conversion factors are provided for users and can be conducted in independent steps or be incorporated into the formulas.
98	5.3.1	E	Increase clarity and formality.	replace "/" in "support/refute" with "or"; and remove "or to establish..." as this is redundant.	REJECT: The consensus body feels the current wording is clear, however the "/" was replaced for consistency with other edits.
99	5.3.2	E	Increase clarity and formality.	replace "of the blood draw/reath test" with "the test sample was obtained"	REJECT: The consensus body feels the current wording is clear however the "/" was replaced for consistency with other edits..
61	5.3.2 (page 6)	E	E.g. If the subject...	Suggest putting statement inside parentheses and changing to e.g.	ACCEPT WITH MODIFICATION: The "E.g." was replaced with For example,
17	5.3.3	E	No elimination is being accounted for, this example oversimplifies an attempt to answer the question: "if someone had X number of drinks, could they have reached the measured AC?"	Suggest moving the language below equation (7) that states "This calculation provides the theoretical maximum alcohol concentration. It assumes full absorption with no elimination. See A.1.2 example" to above the equation to further qualify the paragraph that includes "The calculations are used to attempt to answer the question: 'If someone had X number of drinks, could they have reached the measured AC?'" Since this would NOT necessarily be applicable if a longer drinking period occurred. This is especially important if the admitted drinking episode spans several hours or if the subject is contacted several hours after the driving.	REJECT: 5.3.3 provides a basic example of applying the formula, 5.3.4 points out that other factors may be appropriate to consider, such as alcohol elimination during the drinking period.
100	5.3.3	E	Increase clarity and formality.	replace "/" in "support/refute" with "or"	ACCEPT: Replaced "/" with "or"
101	5.3.3	E	Increase consistency throughout document.	At the bottom of page 6, insert "for" before "example".	ACCEPT: Added "for"
102	5.3.4	T	Increase clarity. The statement is already qualified by "if necessary or applicable". Use of "may" suggests that when necessary, eliminated alcohol may or may not be considered.	replace "may" with "shall"	REJECT: The consensus body feels the current wording is appropriate. Sometimes the result is clear without needing to further consider elimination.
117	5.4		There is no guidance on whether retrograde extrapolation is appropriate when drinking ends at the time of the incident and the number of servings/serving sizes are unknown.	Include a subsection that addresses active alcohol consumption at the time of the incident and whether retrograde extrapolation is appropriate under this scenario.	REJECT: There is guidance to account for potentially unabsorbed alcohol (see 5.4.6).
118	5.4		There is no guidance on how retrograde extrapolation should be addressed when consumption ends 10-15 minutes prior to the incident in question and the number of servings/serving sizes are unknown.	Include a subsection that addresses active alcohol consumption just prior (10-15 min) to incident. Retrograde extrapolation can be conducted IF additional assumptions are applied. These assumptions would assume that 1) the BAC at the time of the test represents the individuals peak BAC at the time of incident as long as the time of the test was within 2hrs of the incident, 2) that the low-end elimination rate of 0.010%/hr is used in cases where the test was outside the 2hr plateau, and 3) the individual has reached at least 80% of peak BAC within 10-15 minutes post consumption per the following articles: Breen et al. Med. Sci. Law, 1998, 38(1), 62-69; Ganert & Bowthorpe, Can. Soc. Forensic Sci. J., 2000, 33(3), 137-143; Jones & Neri, Can. Soc. Forensic Sci. J., 1991, 24(3), 165-173. Also include an example in Annex A.	REJECT: There is guidance to account for potentially unabsorbed alcohol and unknown drinking history (see 5.4.6).

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
103	5.4.1	E	Increase clarity.	replace "a range of concentrations" with "a concentration range"	ACCEPT: Replaced "a range of concentrations" with "a concentration range"
104	5.4.4	E / T	Associated with comment #5, a single elimination rate could be used in calculations in addition to the range. More specifically, the range simply shall be 0.010 to 0.025. If the intent of the authors is to suggest elimination rates outside of this can also be used, to what limit should be outlined. In other words, would 0.001 to 0.100 be okay?	include "An additional calculation could be performed using a single elimination rate within this range."; replace "minimal range" with "range"	REJECT: The document recommends that the elimination rate range not be narrower than 0.010 to 0.025, hence the use of the term "minimal range". This range is consistent with the literature and recommended by Jones. A broader range could be applied, but the limit would be subject to the expert basing it on published literature. A single value for elimination rate is not recommended. An average elimination rate may be an appropriate representation of a given population, but it is not an appropriate representation of an individual.
134	5.4.4, now 5.4.4.1	T	"shall be 0.010 g/dL/hour to 0.025 g/dL/hour". Many authors support the use of 0.01 to 0.02 to yield a more conservative estimate (Shajani, N.K, Dinn, H.M. (1984), Wigmore, J.G., Elliot, M. (2004), Palmentier, J-P. F.P., Wallage, H.R. (2015), Stowell, A.R., Stowell, L.I. (1998)) . This should be permitted in this recommendation.	Revise to 0.01 to 0.02 g/dL/hour	REJECT: The consensus body agrees with the current range which is consistent with Jones' recommendation and other literature.
105	5.4.4 and Foreward	E / T	The complete exclusion of 0.015 g/dL/hour is unnecessary. Agree it should not be provided alone, but more of the population are closer to 0.015, than 0.01 or 0.025. It does have value it used proerly.	Include reference to 0.015 g/dL/hour and include whatever required language surroundign to ensure that it is used with the ranges and not in isolation.	REJECT: The range is intended to help mitigate bias. An average elimination rate may be an appropriate representation of a given population, but it is not an appropriate representation of an individual.
29	5.4.5	T	Elimination rate from 2 or more measurements shall not be used. The only accurate possible date you have shall be excluded	Calculate the eliminate rate and discuss it with the range. HOWEVER, when you calculate a 0.03, do not bother doing the calculation with a 0.010, as it DID NOT HAPPEN IN THIS CASE	REJECT: There are many factors that could impact the reliability of calculating an individual's elimination rate. The tests may not be from the same matrices, or they may not both be in the linear phase of the BAC curve. Further, BAC curves are a best fit of multiple data points; two individual points on that curve may not accurately represent the slope.
121	5.4.5	T	"An Alcohol elimination rate calculated from 2 or more tests shall not replace a range...." There is no science to support this requirement in the pharmacokinetics section. If the calculated result is in the range 0.010 and 0.025, then why not use two alcohol values to provide a substantive elimination rate? If this is non-negotiable then an explanation of why this is prohibited will assist practitioners explain why this is the case if asked, rather than it appearing to be a random 'rule'.	elaboration on why this is inappropriate should be included in the PK section. Include provision to use the substantive calculated rate from 2 results if within the 0.010-0.025 and the history indicates last drink was >2 hrs after drinking stopped	REJECT: There are many factors that could impact the reliability of calculating an individual's elimination rate. The tests may not be from the same matrices, or they may not both be in the linear phase of the BAC curve. Further, BAC curves are a best fit of multiple data points; two individual points on that curve may not accurately represent the slope. Section 4 is not intended to be a comprehensive review of alcohol pharmacology.
122	5.4.5	T	provide guidance on which BA test to use -always use a blood test? Always use a breath test? Only use the BAC closer to time of the incident? use the BAC measured further from the incident to lessen impact of unabsorbed drinks....	Insert clause: Where there are multiple test results, the choice of which test is used in the calculation should be clearly explained, taking into consideration relative accuracy of the tests or other factors....	REJECT: These types of case specific decisions would be subject to the opinion and judgement of the expert.
30	5.4.6.1	T	It is not reasonable to assume that the subject is post absorptive. Data from Dubowski, Jones, and Reinhart, as well as others repeatedly shot to people take longer than 2 hours	Stop pretending that a person is postabsorptive at two hours.	REJECT: The consensus body considers 2 hours an appropriate range based on the majority of the published literature. In addition, an unpublished but substantive study by Corbett and Burnley (SOFT 2013) demonstrated that 99.2% of people were in the linear elimination phase by 120 minutes post consumption; this study included 796 subjects with various drinking patterns.
7	5.4.6.2	T	It is unreasonable to assume the subject is not in the post absorptive phase, or close to it ("see citations from 4.1.2 comments) In addition, since drinking history is unknown, one cannot subtract quantites of alcohol from a calculated BAC (such as in A.5)	Instead of "it is not reasonable to assume that the subject is only post absorptive" state "When drinking history is unknown, an assumption must be stated clearly with the calculations that the subject was presumed to be in the post-absorptive phase."	REJECT: In addition to clearly stating any assumptions, the document recommends having a basis for those assumptions. When no drinking history is available, there is nothing to base a post absorptive assumption on, so it should not be presented in isolation.
57	5.4.6.2	E	"...is only post absorptive." An individual subject cannot be both post absorptive and NOT post absorptive at the same time. If they are still absorbing alcohol, they would not be post absorptive.	"is post absorptive"	ACCEPT: "only" was removed
134	5.4.6.2	E	The word "only" seems out of place. A person is either post-absorptive or not.	Remove "only"	ACCEPT: "only" was removed
135	5.4.6.2	T	Technically speaking, drinking histories are almost always unknown. There is often a <i>stated</i> drinking pattern, but calculations frequently show the stated drinking pattern is not plausible (meaning we don't know the actual drinking history). Stating that it is not reasonable to assume full absorption when the drinking history is unknown would mean that an assumption of full absorption would rarely be reasonable. Additionally, calculations are done based on <u>hypothetical</u> scenarios. When there is no information about the drinking pattern, what is the harm in doing a calculation for the <u>hypothetical</u> scenario in which the subject was post-absorptive? As long as it is made clear to the trier of fact that it is a hypothetical scenario and based on an assumption of full absorption, it's weight as testimonial evidence can be properly assessed. Additionally, the counter hyphothetical in which the subject was not fully absorbed can be discussed as well, so that the range of possibilities is presented.	Change language. Suggestion: "If there is no information about drinking history provided, an assumption that the subject is post-absorptive can still be made as part of a hypothetical scenario, but the expert should also address the alternate hypothetical scenario in which the subject is not post-absorptive. Additional calculations can be applied to assess the impact of potentially unabsorbed alcohol. See A.5 for example."	REJECT: The recommendations as currently written do not prohibit what the commenter has described. See A.5 example.



#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
106	5.4.6.4	E	Increase clarity.	replace "An option to account..." with "To account..." as no other options are provided.	REJECT: This is an example of how to account for it, the wording was intended to allow other possible approaches.
124	5.4.6.4	T	We note there is only one "option" mentioned to account for unabsorbed alcohol. It might be a good idea to note that other ways may be used.		REJECT: The consensus body feels the current wording accounts for the possibility of other options.
107	6 Title	E	Remove redundant 'best practice' for increased clarity OR if the intent for these sub-sections are to be considered with the same weight as the remainder of the document, consider renaming this entirely.	remove "Best Practice" from section 6 sub-title as it is already in the title of the document; OR rename 6 to "Protocols, Documentation, Technical Review and Testimony" AND move the single sentence about postmortem specimens to the Foreword.	ACCEPT: Removed "best practice recommendation". Postmortem was removed from this section, and clarified in the scope as not being addressed in this document.
68	6	E	This section doesn't have any recommendations for analysts rely upon BAC at the time of test. This would eliminate any necessity to do calculations mentioned in this document which are implied to be difficult/subject to human error/estimations based on assumptions.	Add a subsection with the recommendation that states should change their per se laws from BAC at the time of driving to the time of the chemical test(s).	REJECT: It is not within the scope of the document to make legal recommendations.
39	6.1	E,T	Although we understand the concept and intention behind the idea of documentation and technical review, we believe that in the context of alcohol calculations, these types of practices would be exceptionally difficult to implement in real world scenarios without extreme changes to the workflow of both the lab and the courtroom. The nature of the courtroom fosters a back and forth, fluid argument format (direct, cross, redirect, re-cross, rebuttal), and this is a key element in the ability of the prosecutors and defense attorneys to make their cases. 6.1 Documentation is redundant and only minimally functional in this scenario: * documentation only be reasonably possible in scenarios with TR (which as discussed below, covers only a very small subset of situations) *documentation, if done on the stand, would add additional time to court proceedings *documentation, if done after the fact for the case record, would rely on the witness' memory and may not be accurate/complete *would serve minimal long term purpose since most DUI cases have verdicts within days of the testimony *is redundant since court transcripts document all witness responses in the courtroom	Consult further with laboratories and employees of the court to determine the impact of the proposed best practice protocols. Evaluate pros/cons and determine whether this course of action is suitable or whether another solution needs to be developed.	REJECT: The consensus body supports the recommended practices outlined in section 6. The section includes language that addresses the concept that these practices may not always be feasible in all jurisdictions or in every situation.
49	6.1	T	"Calculations should be documented, and assumptions clearly stated. This may be in the form of case notes, an electronic spreadsheet, a written report, etc." Assumptions should be clearly stated in a report to the customer, not hidden in a spreadsheet or case notes.	Clarify what documentation would be retained by the FSP (e.g. the electronic spreadsheet or case notes) and what should be reported to the customer.	REJECT: Document retention is outside the scope of this document. 6.2 was modified to add consideration of including section 6 components in written protocols.
18	6 (6.1-6.4)	E	The comment adjudication from the original draft documents on commentary and feedback specific to 6.1 Documentation, 6.2 Protocols, 6.3 Technical Review, and 6.4 Calculations During Testimony, particularly in response to commentary and feedback from laboratories in California where on-the-fly calculations are done in nearly every DUI related trial in the State focused on acknowledging that these recommendations and considerations may not apply in every situation where calculations are performed and reaffirmed discouraging performing calculations during live testimony. Wording in this Best Practice Recommendation is identical to those draft documents. In California, the documentation of the calculations performed during live testimony occurs by either a recording of the proceedings or through the use of a stenographer. Technical Review of live calculations is not possible due to the nature of it being live testimony. Calculations are done live, on the stand, all the time and training programs are such that experts are prepared for this type of examination in trial and must demonstrate competency and proficiency in performing those calculations and properly stating their assumptions before they are ever considered to be released to do so in court.	Suggest adding a statement before section 6.1 that the following Considerations and Best Practice Recommendations may not be applicable or enforceable in some jurisdictions due to the nature of their court and trial practices rather than blanketly discouraging the accepted practice for trying a DUI case across an entire state.	REJECT: The consensus body supports the recommended practices outlined in section 6. The section includes language that addresses the concept that these practices may not always be feasible in all jurisdictions or in every situation.
108	6.3	E / T	Increase clarity regarding review of calculations. If calculations are performed by a validated electronic spreadsheet, is it the authors intention to still require independent review?	add after "calculations" the phrase ", however obtained" to suggest that even if calculated using a validated electronic spreadsheet, the calculations should be reviewed to mitigate any errors from data entry	REJECT: The section is not intended to provide specifics of the technical review process that could apply to the various way in which to conduct and document the work.
40	6.3	E,T	It is not possible for attorneys to pre-plan all permutations of calculation questions asked by prosecutors during direct; it is inevitable that additional calculations will be asked on the stand: *TR would only be potentially possible for some questions asked by the prosecutors during direct *Defense is not obligated to submit questions or strategy ahead of time *The courtroom is fluid and questions will change depending on the adversarial interactions of the attorneys	Consult further with laboratories and employees of the court to determine the impact of the proposed best practice protocols. Evaluate pros/cons and determine whether this course of action is suitable or whether another solution needs to be developed.	REJECT: The consensus body supports the recommended practices. The section includes language that addresses the concept that these practices may not always be feasible in all jurisdictions or in every situation.
109	6.4	E	Increase formality in the first sentence.	replace "in their head" with "on demand during testimony"	ACCEPT WITH MODIFICATION: Removed "in their head"
110	6.4	E	Increase formality and rigor in the second sentence.	replace "various risks to quality it may create" with simply "risks"	ACCEPT WITH MODIFICATION: Reworded for more concise language.



#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
111	6.4	E	Increase clarity.	replace "When so compelled" with "When so legally compelled"	REJECT: Adding "legally" would be redundant rather than clarifying. The paragraph is clear this is within the context of the courtroom.
112	6.4	E	At the top of page 7, increase clarity by including a review of the work.	replace "to perform the work" with "to perform and request a review of the work"	ACCEPT WITH MODIFICATION: The concept of review was added to the sentence
113	6.4	E	Increase formality.	replace "/" with "or"	ACCEPT: Replaced "/" with "or"
9	6.4	E	Not sure where to begin on this one. This section appears to discourage conducting calculations on the stand, and bases this recommendation using made-up reasons and by somehow isolating calculations as being more of a forensic service than say providing an opinion or providing any other part of one's testimony. Testifying as an expert is in of itself is a forensic service request. The entirety of an expert's testimony is not viewed as just a bunch of questions. Is there a rash of experts running around who are not respecting the gravity of testifying as an expert in court? The idea that an expert while testifying would treat any question or a request to perform a calculation on the stand as "just a question during direct or cross examination" is unfounded. And as a matter of fact, I think most mathematicians would consider the calculations we do as "simple math". But even so, is there any evidence there are experts who are conducting these calculations "in their head", or somehow not being diligent about what they testify to? Asking the court for a recess to conduct a calculation is both an imposition on the court and a sign of poor training of the expert. There should be no reason a properly trained and prepared expert cannot perform, document, and check one's work in a timely manner while on the stand. If the expert cannot do that the expert should be re-trained. What this section does is it sets a guideline for the lowest common denominator and punishes the court for poor preparation. Rather, a new standard should be written on the minimum training achievements necessary to testify on alcohol effects, and one of those achievements should be the ability to perform, document, and check calculations while on the stand.	Remove section	REJECT: The recommendations in this section are focused on basic quality assurance applied to forensic practices.
31	6.4	T	Calculations on the stand	In my experience, having testified several thousand times over the last 29 years, evidence is adduced at trial and you do not hear it until you are on the stand. If you are not competent enough to do the math and check it on the stand, you should not be testifying.	REJECT: No resolution was proposed.
41	6.4	E,T	requesting a recess to perform calculations should be reserved for only when absolutely necessary *unplanned recesses are disruptive to the courtroom *excessive recesses add undue time to the courtroom proceedings and will not be well received by court personnel *frequent recesses to address permutations of fact patterns used in calculations will disrupt a jury's ability to follow and process technical information We believe that the recommendations proposed in these sections are not feasible and don't provide an effective way to address the concerns of "risks to quality" involved in performing alcohol calculations.	Consult further with laboratories and employees of the court to determine the impact of the proposed best practice protocols. Evaluate pros/cons and determine whether this course of action is suitable or whether another solution needs to be developed.	REJECT: The consensus body supports the recommended practices. The section includes language that addresses the concept that these practices may not always be feasible in all jurisdictions or in every situation.
69	6.4	E	The idea of requesting the Court for a break everytime there's a hypothetical that involves math seems a little out of touch. There have been times where I tell the Court that the type of calculation(s) will take a few minutes, at that point the Court elects to give the jury a brief break.	Change "...the expert may consider requesting a brief recess to perform the work." to "...advise the Court that the calculations will take a few minutes to perform".	REJECT: The section does not attempt to provide every alternative an expert might employ to avoid the need to perform calculations during testimony, or to ensure quality when the need arises.
135	6.4	E	"is a forensic service request" use of this language is too limiting, is un-necessary, and should be removed. The meaning intended would still be conveyed without requiring this to be a "service request", which may have accreditation implications.	Remove "is a forensic service request"	REJECT: The consensus body agrees this is a forensic service request and should be treated as such.
136	6.4	E	There are practical considerations to consider when providing the recommendation that alcohol calculations be performed ahead of time. Sometimes it is unknown what information is going to be allowed into testimony/evidence, and sometimes the information changes from pre-trial to trial, so it would be somewhat limiting/burdensome to require all calculations to be done ahead of time.	Soften language to be less restrictive/discouraging of the practice of live calculations. Possibly recommend calculations to be performed ahead of time and reviewed, where practical, while recognizing that due to the nature of the trial process, that may not always be plausible.	REJECT: The current language provides a great deal of flexibility and is not restrictive.
137	6.4	E	"When so compelled, it is recommended that the witness document the additional work." This statement is vague.	Provide more detail about how live calculations should be documented.	REJECT: There are a variety of ways live calculations could be documented and that is left up to the forensic service provider.

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
114	6.5	E	Increase clarity with specific variables for postmortem consideration.	insert after variables "(e.g., postmortem redistribution, site of collection, specimen quality, associated analytical challenges)"	REJECT: The section was removed and clarified to be outside the scope.
33	A2	T	Ignores plateau possibility	discuss plateau possibility	REJECT: The example is illustrating a scenario in which it is reasonable to assume the subject is post absorptive (also post plateau).
62	A.3	E	Relevant Information: sex is not listed so I found myself having to go back to the narrative to pull that info out.	Add sex to relevant information for examples where individualized Vd are calculated	ACCEPT: Added "female" to the "Relevant information" section
138	A.3	T	The assessment of potentially unabsorbed alcohol in this example appears to be inconsistent with recommendations of the standard. Section 5.4.6.1 states that 2 hours is a sufficient period to reasonably assume full absorption. In Example A.3, however, the only potentially unabsorbed alcohol addressed is that which was consumed right at 11pm, just before the crash. Alcohol from the other drinking, which ended at 10pm (only 1 hour prior to the crash), it not addressed as possibly being unabsorbed to any extent. This implies that 1 hour is sufficient time to assume full absorption (which I actually think is appropriate for doing the calculation, with the qualification that some alcohol from that time could still be unabsorbed).	Either change the timeframes in the example to provide at least two hours between the end of the earlier drinking and the crash; or account for potentially unabsorbed alcohol from the earlier drinking; or include language to clarify that full absorption of the alcohol from the earlier drinking could have been reached in that 1 hour timeframe, and that the calculation is being done on that assumption.	ACCEPT: The Summary was updated to acknowledge the possibility of additional unabsorbed alcohol.
34	A3	T	Need example where short drinking time and quick AC result indicate possibility of considerable absorption. That is possibility of multiple drinks and partial drinks being unabsorbed	Make additional example	REJECT: The document does not attempt to address every possible scenario.
35	A4	T	Should acknowledge that his claimed drinking after the crash could be significant and he may have been under the "legal limit" at the time of the crash.	Expand discussion to include fact that drinking after raises the possibility that the BAC at time of crash is under 0.08 AC	REJECT: The example is intended to address the claim that there was no drinking prior to the crash, not to estimate his AC at the time of the crash. While that may be the likely next question in such a scenario, the example is just covering the claim.
63	A.4	E	Minor--Check math for Vd(male) calc--0.62 instead of 0.61	correct	ACCEPT: Calculations updated to reflect the rounded numbers provided in the text of the example. Original calculations were done in excel where no rounding of inputs (e.g. weight conversion) was done throughout the steps. This also impacted the display of the calculated range.
64	A.4	E	Minor--Last Equation using Eq 8, based on calculation, AC is 0.151, not 0.150	correct	ACCEPT WITH MODIFICATION: Calculations updated to reflect the rounded numbers provided in the text of the example. Original calculations were done in excel where no rounding of inputs (e.g. weight conversion) was done throughout the steps. Due to the changes in the Vd calculation, the corrected ACs were updated accordingly.
70	A.5	T	Rather than doing a lot of math where at the end of the day it will never be known what's the absorptive status of the individual at the time of driving, the analyst should be able to tell the Court that they can't provide a retrograde extrapolation.	In the summary add the following. "Alternatively, the analyst can elect not to perform this calculation due to missing information that can't be assumed by the analyst".	REJECT: As stated in the Annex NOTE, the examples are not intended to represent the only way an analyst can handle a request.
139	A.5	T	In the table at the bottom of page 17, the Vd range is listed as 0.40-0.80. This should be 0.45-0.81.	Correct range to 0.45-0.81.	ACCEPT WITH MODIFICATION: The original text was an error, however the example was edited to the updated range.
36	A5	T	Standard drink	See line 6 comment above	REJECT: Unclear what "See line 6" refers to. Suggest commenter reference the adjudication of that previous comment.
115	Annex A	E	Replace "pts" with spelled out units for clarity - "pts" is not terribly common in usage.	replace "pts" with "pints" throughout the Annex	ACCEPT: Replaced " pts" with the full word
116	Annex A	E	Increase clarity and formality.	replace "internet site" with "manufacturer's website"	ACCEPT: Replaced "internet site" with "manufacturer's website"
19	Annex B	E	none	Add the Jones and Tilson JFS 2023 publication on converting serum/plasma to whole blood (J. For. Sci. 2023; 68:9-21) to the bibliography	ACCEPT: Reference added

#	Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
37	Annex B	T	References	<p>In the good old days, prior to the invention of the two hour rule, State's witnesses routinely admitted that absorption could and did take longer than two hours for maximum AC to be reached. They cited articles by Dubowski, Jones, Zink &amp; Reinhart, and others, some of which showed time to reach maximum BAC of up to almost 4 hours.</p> <p>Upon the invention of the two hour rule, that "old" literature is seldom mentioned. Now we hear about articles like Stowell &amp; Stowell, Shahani, Watts &amp; Simonick, Adler and Watkins, all discussing "social drinking" and the new trend is to say the person is post absorptive by 2 hours. When the old literature is mentioned, those results are described as outliers, indicating that you need to teach a class on what an outlier actually is.</p> <p>In law, a new case takes precedence over old law and the old law is no longer used. That does not happen in science. The only way a new study can triumph over an older study is to match methods and show a flaw in the older work.</p> <p><u>You need to keep those old references alive</u></p>	REJECT: The bibliography is not intended to be an all-inclusive list, review, or endorsement of literature on the topic.
50	Annex B	E	Reference list is missing key information	Add journal volume and page numbers to references	ACCEPT: Reference formatting was updated
140	N/A	Editorial	This document is very necessary. Having testified over 100+ times on ethanol and interpretation (including back calculations) for driving it has been my experience that different experts can come to a wide variety of predictive calculations for rise per standard drink, or predicted alcohol based on a drinking pattern...and at the same time give a very narrow range of values when calculating a BAC at a previous time. Standardization on accepted ranges, time to postabs state, and Vd would be helpful to all involved: experts themselves, Prosecutors, Defense attorneys, Judges, and Jury. I also appreciate the discouragement of making live calculations. I can't tell you what a waste of everyones time it feels to bang out numbers on a calculator 3 times as a jury watches just to make sure you didn't make an error. Review prior to testimony seems reasonable.	Keep up the good work!	No response needed. Thank you for the feedback.