

Deadline of Submission of Comments:  
Document Number and title:

Public Comment Deadline: January 13, 2022  
ASB Std 100, Standard Scale of Source Conclusions Criteria for Toolmark Examinations

#	Section	Updated Section	Type of Comment (E-Editorial, T-Technical)	Comments	Proposed Resolution	Final Resolution
70		4.2.2		<p>Although I support the revised conditions and treatment of same source/different source conclusions, I found that one of the "conditions" listed as a required trigger for inconclusive determinations could create some serious problems for all comparative conclusions. The inclusion of "damage" (with no further explanation) as a condition that forces an inconclusive determination doesn't reflect real-world scenarios adequately, as damage to a piece of evidence (bullet nose, flattened CC mouth, fragmented bullet jacket) often does not prevent definitive determinations. Suggest "damage" be supplemented or explained in a way that does not prevent same source/different source determinations from being applied when damage to a non-critical portion of evidence (or only a portion of available toolmarks) is present.</p>		<p>Accept with modification: The Inconclusive Conclusions section was re-written and the bullet list referred to was titled "Additional Considerations for Opinions of Inconclusive" with a re-worded introduction to state "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"</p> <p style="text-align: center; color: red;">This section is now number 4.2.2.5</p>
71		4.2.2		<p>There are some bad problems with inconclusive criteria, and I have seen no information that makes me confident that this is addressing the concept of fallibility in a way that is commensurate with other fields, as opposed to in a way that casts special doubt on the assertions of forensic practitioners. I cannot really endorse this standard, but also see no reason to think that rejecting it will result in anything besides a worse standard being adopted.</p>		<p>Reject: No specific change has been suggested; however, the Inconclusive Conclusions section was re-written.</p>

78				<p>The necessary empirical foundation does not exist to support the range of conclusions delineated in the proposed standard for either firearms identification or any other type of tool mark examination. In regard to firearms identification, three federal-government-sponsored commissions rejected the field as unscientific and unverifiable due to a lack of foundational validity underpinning the field. See National Research Council, Committee to Assess the Feasibility, Accuracy, and Technical Capability of a National Ballistics Database, Ballistics Imaging (2008); National Research Council, Committee on Identifying the Needs of the Forensic Science Community, Strengthening Forensic Science in the United States: A Path Forward, (2009); President's Council of Advisors on Science and Technology, Forensic Science in Criminal Courts: Ensuring Validity of Feature-Comparison Methods, (2016). Foundational validity, a necessary prerequisite to determining the accuracy of a scientific methodology, requires repeated, appropriately designed studies measuring error rates and confidence intervals. See NRC Forensics Report, pp. 112-24. Put differently, research must show that a method is both "repeatable and reproducible." PCAST Report, p. 47. However, after evaluating 2,000 papers and studies from various sources, including papers submitted in response to PCAST's request for information from the forensic-science stakeholder community, the PCAST Report concluded that "there is only a single appropriately designed study to measure validity and estimate reliability." Id., p. 111. Even more troubling, no studies exist establishing the repeatability or reproducibility of non-firearm tool mark examination. Therefore, any range of conclusions that imply a statistical basis -- like the conclusions set forth in the proposed standard here -- are inappropriate where none has been empirically demonstrated.</p>		<p>Reject: The PCAST report argument is dated and the discipline has responded to these arguments. The range of conclusions is not based on statistics. The 2008 and 2009 NRC reports specifically say not to use them for the validity of individual disciplines. Research is ongoing to continue to address these concerns.</p>
114			T	<p>Does the discipline want to move away from the Known Non-Match (KNM)/KDST concept, as most examiners cannot remember their actual best KNM or do not physically refer to it during microscopic examinations?</p>	<p>Remove this KDST concept, with no alternate information required.</p>	<p>Reject: The basis of a firearm/toolmark examiner's training is examination of known same source and known different source toolmarks. It would be inappropriate to remove the known different source toolmark concept from this document. The term "best KNM" is not in this document but it originates in the AFTE theory of identification.</p>
293		4.2.2	?	<p>Too Vague. The current AFTE Range of Conclusions Inconclusive three part range is much more definitive and comes much closer to allowing an examiner to truly express how he/she feels about the comparison results.</p>	<p>insert the current AFTE three part inconclusive range and replace the vague way doc 100 is worded.</p>	<p>Accept with modification: The Inconclusive Conclusions section was re-written to include three subsets of inconclusive source conclusions.</p>
213	title		T	<p>Original title was "Standard Scale of Source Conclusions and Criteria for Toolmark Examinations"</p>	<p>The use of "and" was removed and it makes the concept for the standard a little ambiguous. The use of "and" is important to the meaning of the standard</p>	<p>Accept with modification: This document's title was updated to read: "Standard Scale and Criteria for Source Conclusions in Toolmark Examinations"</p>
232	title		T	<p>Original title was "Standard Scale of Source Conclusions and Criteria for Toolmark Examinations"</p>	<p>The use of "and" was removed and it makes the concept for the standard a little ambiguous. The use of "and" is important to the meaning of the standard</p>	<p>Accept with modification: This document's title was updated to read: "Standard Scale and Criteria for Source Conclusions in Toolmark Examinations"</p>
245	Title		T	<p>Title changed from OSAC document and is missing "and" which makes the title confusing. The scope says "scale of conclusions and criteria" so it seems that the intent was to keep and in there?</p>	<p>"Standard Scale of Source Conclusions and Criteria for Toolmark Examinations"</p>	<p>Accept with modification: This document's title was updated to read: "Standard Scale and Criteria for Source Conclusions in Toolmark Examinations"</p>
317	Title		E	<p>"Standard Scale of Source Conclusions Criteria for Toolmark Examination" means that the scale is for the criteria for a toolmark examination. The standard provides a scale or nomenclature for expressing conclusions.</p>	<p>Replace with "Standard Scale of Source Conclusions from Toolmark Examinations"</p>	<p>Accept with modification: This document's title was updated to read: "Standard Scale and Criteria for Source Conclusions in Toolmark Examinations"</p>

370	Title		E	The document title was changed from "source conclusions AND criteria". The new title has removed "AND", making the title confusing and less clear.	"Standard Scale of Source Conclusions and Criteria for Toolmark Examinations"	Accept with modification: This document's title was updated to read: "Standard Scale and Criteria for Source Conclusions in Toolmark Examinations"
16	Title of document		E	Title of document is awkward. The words "conclusions" and "criteria" don't seem to belong together.	Change title to "Standard Scale and Criteria for Source Conclusions in Toolmark Examinations" or "Standard Scale of Source Conclusions <u>and</u> Criteria for Toolmark Examinations"  (Note: underline added to identify proposed change)	Accept
179	entire document		technical	Comparison of ASB 100 vs the original OSAC document brings up a number of differences. There are places in ASB 100 where the wording or language has been changed or completely left out. The wording has also been changed to language that is not commonly used in the field (e.g., KSST vs KM). The OSAC document is written by forensic firearm and toolmark examiners, and the ASB 100 document reads as if it was written by someone that has not worked in the field. There are some good additions (e.g., mention of bias, database searches), but I do not believe ASB 100 accurately reflects the document that was written by the OSAC.	Revisit the OSAC document and discuss the edits with the original authors. Discuss why wording changes and/or omissions made in the ASB 100 document may lead to confusion. Work to produce a final document that is more reflective of the original OSAC document.	Reject: The ASB has an independent duty to critically evaluate proposed standards drafted by the OSAC or any other party. In doing so the ASB (comprised of firearms examiners and other stakeholders) fulfilled that duty and did so in consideration of input provided by OSAC members who attended many of, if not all, of its meetings.
291	All		E	No mention of the Association of Firearm of Toolmark Examiners Theory of Identification. A vetted, tested range of conclusions		Accept: Reference #1 was added to the Bibliography.
292	All		E	The entire document seems hastily put together with a lot of cut and pastes and little feedback from practicing firearm examiners.		Reject: The ASB has an independent duty to critically evaluate proposed standards drafted by the OSAC or any other party. In doing so the ASB (comprised of firearms examiners and other stakeholders) fulfilled that duty and did so in consideration of input provided by OSAC members who attended many of, if not all, of its meetings.
393	All		E	Can history of tool be included just once in a limitations or considerations? Seems oddly repetitive.	Put in different section like limitations or add considerations section	Reject: The "history of tools" is used only once in this document. It is used where it is relevant.
373	overall		technical	Having read this document, and seeing the changes the ASB has done (away from the OSAC document), I have to wonder if the profession and ASB would be better off splitting this into two documents. The first being to only set the range of conclusions with a description of each, and to spend less time on the criteria. The detailed criteria can be in a separate document, or given as a non-exhaustive examples, as is done in the ASB fingerprint document. This is a LOT to work on and get right, and obviously a huge undertaking. The ASB fingerprint document seems to have gone this route, with a simpler standard that might serve a blueprint for a path forward.		Reject: The range of conclusions and the criteria for these conclusions is best suited to one document.
375	overall			The diagram found in ASB013, showing the conclusions and their relative positions to each other would be helpful, especially if the ASB were to go back to a range greater than 3.	Consider providing a diagram that is similar to one found in ASB013, the friction ridge standard for conclusions.	Reject: The WG does not feel a diagram is necessary for this document.
147	General		T	The OSAC document is superior to the ASB document	Use OSAC document as the ASB document. The nomenclature used in the ASB document is not in agreement with the generally accepted terminology in our field and as such should not move forward.	Reject: The ASB has an independent duty to critically evaluate proposed standards drafted by the OSAC or any other party. In doing so the ASB (comprised of firearms examiners and other stakeholders) fulfilled that duty and did so in consideration of input provided by OSAC members who attended many of, if not all, of its meetings.

154	General		T	Trying to figure out why the OSAC did all the work if it was all going to be changed by another panel. Seems like a waste of a lot of time.	Revert to OSAC document. If it is not broke don't fix it.	Reject: The ASB has an independent duty to critically evaluate proposed standards drafted by the OSAC or any other party. In doing so the ASB (comprised of firearms examiners and other stakeholders) fulfilled that duty and did so in consideration of input provided by OSAC members who attended many of, if not all, of its meetings.
155	General		T/E	This standard does not reference a standard methodology (which should also be included in the 2 Normative References). Conclusions can only be drawn with validity if they are the result of a valid method. Additionally, the Firearms & Toolmarks Consensus Body has standards for implementing 3D technologies and a test standard for firearms, but does not have a published standard for toolmark examinations. This standard is not specific to 3D testing and therefore, there is no standard method that this conclusion scale standard references.	If such validated methods do not exist, we should not be contemplating a standard scale of source conclusions. The standard should be withheld until a validated methodology is available.	Reject: Methodology is outside the scope of this document.
156	General		T/E	In addition to task-relevant information, it is important to address task-irrelevant information and the need to protect the analyst from such information and other sources that could introduce bias.	Provide a definition for task-irrelevant information and incorporate suggestions for ways to eliminate bias.	Reject with modification: Task irrelevant does not need to be defined; however, the following sentence was added to section 5 Limitations; "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making source conclusions."
342	General		T	The document is well written. Sample conclusion language for each of the 3 conclusions would be very helpful. Are toolmark examiners allowed to qualify their opinions for same source determination? Such as moderate, or strong support for same source, or do all these conclusions fall under the "inconclusive" category? This needs to be explicit, in the documents and in an examiner's report. If class characteristics and some random characteristics, but not enough random characteristics, line up, this could be a an "inconclusive" conclusion.	The wording of the inconclusive definition needs to make clear that some support for different source and some support for same source will be reported as "inconclusive". The stakeholders who use this document need to understand that a comparison that leads to an "inconclusive" conclusion could support one hypothesis over the other.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source"
274	Foreward		E	this draft wasn't developed by OSAC. This is a drastic revision from the OSAC document	Should show who was responsible for drafting this document and explain that it the original OSAC document was changed for the reason expressed below	Reject: The ASB has an independent duty to critically evaluate proposed standards drafted by the OSAC or any other party. In doing so the ASB (comprised of firearms examiners and other stakeholders) fulfilled that duty and did so in consideration of input provided by OSAC members who attended many of, if not all, of its meetings. The original draft document was developed by OSAC.

39	Foreword / Scope		E	<p>The foreword and scope of Standard 100 both make its scale of conclusions applicable to "all toolmark examinations and comparisons." Numerous commentators have noted the significant limitations of validation studies conducted regarding the accuracy, repeatability, and reproducibility of <b>firearms</b> toolmark comparisons. See e.g., President's Council of Advisors on Science &amp; Technology, "Forensic Science in the Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods," (Sept. 20,2016); Heike Hofmann et al. , "Treatment of inconclusives in the AFTE range of conclusions," 19 Law, Prob., &amp; Risk 317 (2020); Itiel E. Dror &amp; Nicholas Scurich, "(Mis)use of scientific measurements in forensic science," 2 For. Sci. Int'l Synergy 333 (2020). But the field has at least produced some studies appropriately designed, in theory, to measure error rates for such comparisons. In contrast, no studies whatsoever currently exist allowing for the calculation of base rates of error for non-firearm toolmark comparisons. Unless and until such studies are completed there is no scientific basis for expounding a scale of conclusions for toolmark comparisons generally.</p>	<p>The standard should make clear in its foreword and scope that the scale of conclusions it contains applies only to firearms toolmark comparisons and should further note that no such definite statements are permissible regarding non-firearm toolmark comparisons given the lack of validation data currently available.</p>	<p>Reject: The WG recognizes the need for additional research involving non-firearm toolmarks; however, this document is still appropriate as a scale of conclusions for both firearm and non-firearm toolmarks. The fundamentals of the toolmark formation are the same.</p>
310	Forward and scope		T	<p>The proposed scale essentially permits categorical conclusions for comparisons involving any type of tool. If categorical conclusions are permitted, the standard should require that they be accompanied by applicable error probabilities, reasonably estimated on the basis of studies in the published, scientific literature, for the conclusions in question and the type of tool in question. And that the error probabilities be provided in reports and testimony. The proposed scale must also address the uncertainty associated with an opinion of "very strong support for same source", to wit, that the examiner cannot provide an empirical estimate for how many other tools could share the same random characteristics observed.</p>	<p>Add a requirement in section 4 that conclusions /opinions provided pursuant to this scale be accompanied by applicable error probabilities, reasonably estimated on the basis of studies in the published, scientific literature, for the conclusions in question and the type of tool and the type of comparison in question. And require in section 5 "qualifications and limitations" that the error probabilities be provided in reports and testimony. And require in section 5 that an examiner state that they "cannot provide an empirical estimate of the number of tools that could share the same random characteristics observed."</p>	<p>Reject: Section 5 on limitations was re-written.</p>
65	Table of Contents		E	<p>The table should be expanded (at a minimum) into the third tier of the sections. The current high level descriptions does not give enough information regarding the contents of the document.</p>	<p>Include titles at a minimum up to ###</p>	<p>Reject: The display of Table of Contents follows ASB's Style Guide; ASB Staff will finalize the table of contents after the final approval of the document</p>
157	Scope		T/E	<p>The section states that the conclusion scale is for "determining if two or more toolmarks could have been created by the same tool." This standard does not include references that support the claim that a method can determine if two or more toolmarks came from the same tool.</p>	<p>Present valid Black Box studies to support the claim that a method can determine if two or more toolmarks came from the same tool. Otherwise, this standard cannot move forward with identification statements.</p>	<p>Reject: There is a large volume of research in the literature with the goal of assessing validity of the science of toolmark comparison. This document is not the appropriate location to provide such references. The document is not discussing the validity of the comparison methodology.</p>
17	1		E	<p>The wording of the scope should be improved for increased clarity and consistency</p>	<p>"This standard provides a <u>scale</u> of conclusions and criteria to be used for all toolmark examinations and comparisons. These comparisons are conducted for the forensic purposes of determining <u>whether or not</u> two or more toolmarks could have been created by the same tool. This document is limited to the process of <u>reaching</u> source conclusions and does not address or consider other types of conclusions possible in the analysis of toolmark evidence."</p> <p>(Note: <u>underline</u> added to identify proposed changes)</p>	<p>Accept</p>

79	1		E	I suggest changing "toolmark examinations and comparisons" in the first sentence to "firearm and toolmark examinations".	Change to "firearm and toolmark examinations" and then include this clarification in the scope, "Throughout this document, the term "toolmark" is used to refer to both firearm produced and non-firearm toolmarks."	Reject: "all toolmark examinations" is clear as used.
85	1			Line 3 change "created by the same tool" to "created by the same tool or different tools".		Reject with modification: The scope was modified for clarity.
246	1		T	"to be used for all toolmark examinations and comparisons" is not correct. The OSAC document says "for all microscopic firearm and toolmark examinations" There are many examinations in the discipline where it doesn't make sense to use this range of conclusions.	Change first sentence of scope to "This document provides a standard scale of conclusions and criteria to be used for all microscopic firearm and toolmark examinations and comparisons conducted for the forensic purpose of determining if two or more toolmarks were or could have been created by the same tool."	Reject: The scale of conclusions is not only for microscopic comparison analysis.
247	1		T	"determining if two or more toolmarks could have been created by the same tool" is too weak of a statement, it should say "were or could have been created". As it's written it's not useful because in the absence of scientific certainty anything "is possible" and so anything "could" create a toolmark. The idea of the range of conclusions is to determine if the same tool was used. If you keep could then the only conclusions are "physical impossibility (eg. 9mm in 50BMG)" or "yes, it's possible" which is not what you want	Change first sentence of scope to "This document provides a standard scale of conclusions and criteria to be used for all microscopic firearm and toolmark examinations and comparisons conducted for the forensic purpose of determining if two or more toolmarks were or could have been created by the same tool."	Reject with modification: The scope was modified for clarity.
248	1		T	Definition of what types of toolmarks are considered is missing. We should state that we are referring to firearm and non-firearm toolmarks.	Add "Throughout this document, the term "toolmark" is used to refer to both firearmproduced and non-firearm toolmarks."	Accept with modification: "Throughout this document, the term "toolmark" is used to refer to both firearm produced and non-firearm produced toolmarks" was added to the Foreword, see 2nd paragraph.
349	1 - Scope		T	Omitting "were" (part of the previous phrase "were or could have been made by..." sounds like an attempt at purposefully limiting FA examiners to vague conclusions	Include the phrase "were or" to the sentence "...determining if two or more toolmarks <i>were or</i> could have been created by the same tool."	Reject with modification: The scope was modified for clarity as follows "These comparisons are conducted for the forensic purposes of determining whether or not two or more toolmarks could have been created by the same tool."
335	1 (scope)		E	These comparisons are conducted for the forensic purpose of determining	Remove the word "forensic". Suggest "These comparisons are conducted for the purpose of determining"	Reject: the word "forensic" helps to focus the scope of this document.
13	1 Scope		T	The statement " <i>These comparisons are conducted for the forensic purpose of determining if two or more toolmarks could have been created by the same tool.</i> " seems to imply a situation where you don't have a tool. As I read this statement, it is a situation where you are comparing two different unknowns. Also, this statement is bias towards an identification. 5.1.1 states we should be aware of sources of bias. When a comparison is made you are examining the class/subclass/individual characteristics to reach a conclusion based on your observations.	Reword this statement. Include the possibility the tool may or may not have created the toolmarks to remove any influence of bias. Also reword so it includes whether toolmarks could have been created by a specific tool or not as well.	First part, Accept: The second sentence of the scope was re-worded for clarity. Second part, Reject: The wording used in the scope is the standard wording used in the firearm and toolmark discipline to describe comparison examinations, whether that is between multiple unknowns or between unknowns and a known toolmark created in the laboratory using a tool.
311	2 Scope		T	Although there is a substantial literature on framing conclusions in forensic science in general and non toolmark comparisons in particular, this standard has no bibliography. This omission deprives readers of a useful resource and wrongly suggests that forensic science as a field has not been actively grappling with framing conclusions. The bibliography should include work addressing how conclusions should be framed in disciplines analogous to FATM. And it should include specific work in the field of FATM, including both materials that are supportive and those that are critical.	Include a fulsome bibliography with these references linked to the statements in the standard that they support or explain.	Accept: The WG understands NIST is currently working on a comprehensive review of the scientific foundation of the discipline; when that has been published and reviewed, the WG believes it should be added to the bibliography

6	"2"		T	"Annex B, Bibliography" is not available. The Standard should be unclear how it stands with respect established/foundational literature in the field of forensic inference of source.	Add authoritative (or, at least, informative) references in the bibliography, especially regarding the intrinsic limitations associated with forensic source conclusions/decisions. For a recent review and discussion of reporting formats for (federal) examiners see e.g. Cole/Biedermann ("How Can a Forensic Result Be a "Decision"? A Critical Analysis of Ongoing Reforms of Forensic Reporting Formats for Federal Examiners", 57 Hous. L. Rev. 551, 2020, <a href="https://houstonlawreview.org/article/12195-how-can-a-forensic-result-be-a-decision-a-critical-analysis-of-ongoing-reforms-of-forensic-reporting-formats-for-federal-examiners">https://houstonlawreview.org/article/12195-how-can-a-forensic-result-be-a-decision-a-critical-analysis-of-ongoing-reforms-of-forensic-reporting-formats-for-federal-examiners</a> ) and references therein.	Accept: The WG understands NIST is currently working on a comprehensive review of the scientific foundation of the discipline; when that has been published and reviewed, the WG believes it should be added to the bibliography
343	2 (Normative References)		E	The section makes reference to "Annex B, Bibliography" but no Annex B/Bibliography appears in the document	Delete the sentence "Annex B, Bibliography, contains informative references." or add bibliography	Accept with modification: Annex A was added to this document.
275	2 Normative References		E	Where is Annex B located?	Included Annex B via attachment or link	Accept with modification: Annex A was added to this document.
44	Normative references		E	Refers to Annex B bibliography with informative references, but there is no Annex B	Informative references including critiques of particular conclusion language should be included	Accept: The WG understands NIST is currently working on a comprehensive review of the scientific foundation of the discipline; when that has been published and reviewed, the WG believes it should be added to the bibliography
158	Normative References		T	The standard states that there is an Annex B that contains a bibliography. The claim that toolmarks can identify a sample to a source cannot be made without support.	Provide Annex B for review with the standard.	Accept with modification: Annex A was added to this document.
122	Terms and Definitions		T	The use of Class, Subclass and Individual has been demonstrated to be in need of modification but I do not agree with the use of "Random Characteristics" to replace "Individual Characteristics.	Create a numbered level of detail (e.g., Level 1, Level 2 and Level 3 Detail) to correspond with Class, Subclass and Individual respectively. The existing definitions of these levels are pretty solid. However, attempting to have a self-descriptive name for the definition is very difficult to summarize the entire definition into a word or phrase. Individual vs randomly acquired characteristics vs random characteristics... it gets too fuzzy and after a while the phrase becomes so long that it is difficult to use in testimony or notes. It may be much more simple to give the three levels non self-defining names (i.e., Level 1-3) and use the definitions to define them and not the name. There is so much debate over the name because there is no good solution. This can be remedied with the Level 1-3 method. This would also put us in line with Latent Prints which is a good thing to be in line with other pattern matching disciplines.	Reject with modification: the term random characteristic has been returned to individual characteristic

123	Terms and Definitions			<b>Levels of Characteristics</b>	<b>The focus of these definitions should be shifted to the tools themselves and not the toolmarks created by tools. The three levels of detail exist on the tools and may therefore be transferred or expressed onto substrates in the form of toolmarks. This makes it much easier to discuss that (1) there are infact these types of detail on tools (2) they may be expressed as toolmarks and (3) it is up to trained examiners to differentiate the three levels accurately.</b>	Reject: The definitions of the levels of characteristics are sufficient for this document.
86	3.1			Why deviate from the industry accepted definition found within the AFTE glossary? The difference may be slight, however intentionally making a difference for the sake of being different will only create unnecessary points of argument between firearm examiners and their critics. If the reason for the difference is due to potential copywrite issues, then cite the AFTE glossary. This same idea will continue throughout the remainder of the "terms and definitions" section		Reject: The choice of definitions is intended to bring clarity and consistency to customers (courts, LE, attorneys) as well as within the FA/TM community.
124	3.1		T	<b>Redefine Class Characteristics as "Level 1" "Observable" does not need to be in the definition beause all three levels are observable.</b>	<b>Level 1- Physical features of a tool surface that are a result of in-tolerance design and manufacturing decisions. These characteristics are determined prior to manufacture. Level 1 characteristics expressed as toolmarks may be used to reach exlusions, opinions of different sources and opinions of insufficient support .</b>	Reject with modification: the word "observable" was removed from the definition; the term remains class characteristics.
249	3.1		T	The NOTE is vague. What are "acceptable tolerances"? The original document was more clear and stated that these are "acceptable manufacturing tolerances" which defines that they are the normal variation that one would see in manufacturing and that a manufacturer would accept as passing their QC measures.	"result from design and manufacturing decisions that are within acceptable manufacturing tolerances and are ..."	Accept
318	3.1		E	"Class characteristics" is defined as "observable features of a specimen which indicate a restricted group source." The wording is awkward. What is a "group source"? In what way is the group source restricted?	Redefine. Perhaps, "Class characteristic. A feature or property that is shared by a set of more than one objects." Or, better, abandon this terminology. A class can consist of a single member.	Reject with modification: The choice of definitions is intended to bring clarity and consistency to customers (courts, LE, attorneys) as well as within the FA/TM community; the word "observable" was removed from the definition.
319	3.1		T & E	A "NOTE" adds that "Class characteristics result from design and manufacturing decisions that are within acceptable tolerances and are, therefore, determined prior to manufacture." This limits "class chacteristics" to marks or other features that manufacturer intends to be present, but that is not how the general definition above the note is much broader. Moreover, the fact that the manufacturer has targets for variation in the maniuufacturing process does not mean that these targets are always met. Consequently, not all class characteristics result from manufacturing specirfications.	Eliminate the note (and the later effort to define "subclass characteristics").	Reject: The choice of definitions is intended to bring clarity and consistency to customers (courts, LE, attorneys) as well as within the FA/TM community.
276	3.1 Class Characteristics		T	This should be Observable/Measureable	Measurable to be added because you can observe the number of lands and grooves, but you have to measure them to gain information. Same with caliber	Reject with modification: Definition updated to be more generic. "Observable" was replaced by "physical".
81	3.1, 3.4, 3.5, 4.1.3, 4.2.1.2.1, 4.2.1.2.2, 4.2.2.1, 4.2.2.2, 4.2.3.2		E	To go with my previous comment, change class, subclass, and random characteristics throughout the document	Change class characteristics to Level 1 characteristics, subclass characteristics to Level 2 characteristics, and random characteristics to Level 3 characteristics	Reject: The consensus body does not believe the latent print terminology is appropriate for the firearms and toolmarks discipline.



55	3.2		T	Known Match (KM) is preferred terminology over Known Same Source Toolmarks (KSS). Historically, all relevant research and books published, presented, and taught have used the KM and KMN terminology. It would be very confusing to suddenly change this terminology and have it not agree with any of the published materials currently available. If the concern is based on how "scientific" it sounds, DNA uses "match" in their terminology, and are often called the gold standard.	Change this terminology back to Known Match (KM).	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
87	3.2			I am not opposed to KSST, however the industry standard is "Known Matching". KSST is an unnecessary deviation that means the same thing.		Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
251	3.2		T	Known Same Source Toolmarks is a non-standard term. A standard term like "Known Matching Toolmarks" is preferred. We've never seen KSST in the discipline, publications, or other standards	Known Matching Toolmarks is preferred.	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
113	3.2 and 3.3		E	The terms "Known Same Source Toolmark (KSST)" and "Known Different Source Toolmark (KDST)".  The terms "Known Match (KM) and "Known Non-Match (KNM)" are the terms used in the field and literature. The term "match" is appropriate in this context and is more understandable to a lay person when describing how an examiner develops their ability to discern patterns of similarity and dissimilarity when comparing toolmarks.	Replace KSST and KDST with KM and KNM.	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
294	3.2 and 3.3		T	These seem to be equally applicable to KM and KNM, and in these situations it is truly known if a match is the case or not	Use KM/KNM	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
150	3.2, 3.3		T	Why are KM and KNM not sufficient? These are the terms that are defined by the discipline.	reinstate the OSAC definitions and remove KSST & KDST	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
159	3.2/3.3		E	Using the term "known" is misleading and does not follow the language that is widely used. Furthermore, these acronyms do not add value to the document, and only make it more difficult to follow.	For clarity purposes, continue to only use the terms source inclusion and exclusion.	Reject: Source inclusion and exclusion are conclusions that may derive from a comparison whereas KSST and KDST designate known quantities of specimens.
56	3.3		T	Known Non Match (KNM) is preferred terminology over Known Different Source Toolmarks (KDST). Historically, all relevant research and books published, presented, and taught have used the KM and KMN terminology. It would be very confusing to suddenly change this terminology and have it not agree with any of the published materials currently available.	Change this terminology back to Known Non Match (KNM).	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.

88	3.3			I am not opposed to KDST, however the industry standard is "Known Non-Matching". KDST is an unnecessary deviation that means the same thing.		Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
252	3.3		T	Known Different Source Toolmarks is a non-standard term. A standard term like "Known Non-Matching Toolmarks" is preferred. We've never seen KDST in the discipline, publications, or other standards.	Known Non-Matching Toolmarks is preferred.	Reject with modification: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. A Note was added to the definition to bridge the KM and KSST terminology.
5	3.4		E	The use of 'random' characteristics in place of individual characteristics is a major change to the discipline that isn't grounded in science and has far reaching effects for all other discipline standards/best practice recommendations, not to mention courtroom testimony. The wear and chip formation of a tool used to manufacture firearm parts is considered a random process, but the characteristics on a firearm imparted onto a bullet or cartridge case during the firing process aren't by definition random, meaning 'unpredictable, unplanned, arbitrary.' I am not sure why there was a change in verbiage of this magnitude, but individual characteristics does not imply uniqueness, nor does the pattern of individual characteristics used to reach same source conclusions imply uniqueness. If the discipline insists on moving away from individual characteristics, then perhaps 'incidental characteristics' is a more appropriate term.	Change random characteristics to individual characteristics. Incidental characteristics may be an appropriate alternative.	Accept
14	3.4		T	Random characteristics are used in place of individual characteristics.	Obviously this is used intentionally throughout the document. Individual characteristics is the term used throughout AFTE and within the glossary. I understand why we should not use the word "individualize", however, the term individual characteristics has a completely different meaning and definition. "Random characteristics" is not listed in the glossary and is also somewhat incorrect. If I place a flathead screwdriver on the breech of a firearm and strike the back of the screwdriver with a hammer I have created an intentional mark on the breechface. By definition, this mark is an individual characteristic on the breech of the firearm. In layman's terms I would not classify that as a "random characteristic" as it was intentionally created. In the note at the bottom of page 3 the term "individual characteristics" was used in place of random characteristics.	Accept

18	3.4		T	<p>The use of the term "random" is easily misunderstood as used here. The characteristics of the toolmarks themselves are not random. Rather, the imperfections on the tool arose randomly. I understand the aversion to the term "individual", but something less ambiguous than "random" is needed.</p> <p>Additionally, the word "random" appears in the term and in its definition.</p>	<p>Revert to individual characteristics as the term, but retain the definition presently in the document. With the clear definition provided there should be no issue using the term individual characteristics. It is a well established and understood term.</p> <p>Alternatively, use some other term such as identifying characteristics (identification is already used in this document in 4.2.3) or accidental characteristics.</p> <p>Note, this change must occur everywhere "random characteristics" are used in the document.</p>	Accept
57	3.4		T	<p>Changing Individual Characteristics to random characteristics will also affect numerous research articles, publications, books, and other "theory" based documents within the realm of Firearm and Toolmark Identification. Agencies may have difficulty adopting new terminology. The word random should not be in the definition of "random characteristics" without defining what "random" means in this context. Is random statistically based?</p>	<p>Change back to "individual characteristics" and leave the term "random" in the definition or take "random" out of the definition of "random characteristics," Give random a clear meaning. Could also add the word "patterns" at the beginning of the sentence.</p>	Accept
66	3.4		T	<p>There needs to be a clear distinction between "random characteristics" and "individualizing/unique characteristics". Random characteristics are those that reside on the tool which creates the individualizing/unique toolmarks on the substrate. This point is glossed over. The most commonly used term is Individual Characteristics (unique to that particular firearm/tool) which allows the examiner to make a source conclusion. Its the repeatability of the transfer of these random characteristics from the tool that enable the source conclusion analysis. This is currently not being conveyed. The document seems to imply that examiners just looks like random features to draw a conclusion. I understand the hesitancy to move away from the word "individual" but random is not a good replacement for this.</p>	<p>Change term to "Individual Characteristics" defined as "Individual Characteristics: Reproducible marks produced by the random imperfections or irregularities of tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage.</p> <p>Alternatively, consider coming up with a new term other than Random.</p>	Accept
72	3.4			<p>I have too many comments to vote "yes" but feel we are closer to that than not, hopefully these will be useful:</p> <p>"3.4 random characteristics":</p> <p>I recommend adding language referring to the mark and/or piece of work described in addition to highlighting these characteristics in the tool surface. In the case of an aged or damaged mark (piece of work) there may be additional "random characteristics" that could exist and may be differentiable from the source tool marks or confound their use due to overlap, etc.</p>		Reject with modification: the term random characteristic has been returned to individual characteristic and the definition has been reworded.

80	3.4		T	I don't agree with "random" being the term to replace individual.	<p>I propose that instead of using the terms class, subclass, and individual characteristics, use "Level 1, Level 2, and Level 3 characteristics" defined as follows:</p> <p><u>Level 1 Characteristics</u>: observable features of a specimen which indicate a restricted group source. These characteristics are a result of from design decisions made by a manufacturer that are within acceptable manufacturing tolerances and are, therefore, determined prior to manufacture.</p> <p><u>Level 2 Characteristics</u>: toolmarks produced during the manufacturing process that persist on a series of sequentially manufactured items fabricated by the same tool. These toolmarks are not determined prior to manufacture and are more restrictive than Level 1 characteristics.</p> <p><u>Level 3 Characteristics</u>: Marks produced by the random imperfections or irregularities of tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage.</p>	Reject with modification: the term random characteristic has been returned to individual characteristic; the consensus body does not believe the latent print terminology is appropriate for the firearms and toolmarks discipline.
89	3.4			<p>I do not agree with the replacement of "Individual" with "Random". The game of linguistic semantics is a complex one; however these two words are not interchangeable. Our field's definition of Individual Characteristic (AFTE glossary) is "Marks produced by the random imperfections or irregularities of tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage. They are unique to that tool to the practical exclusion of all other tools". Within this definition "random" references how the toolmarks in question were generated, with "individual" referencing their single source attribution (i.e. individualization). Our job as firearms and toolmark examiners is to analyze forensic evidence in an attempt to determine if toolmarks were produced by the same or different tool. This task by definition means we are attempting to individualize based on the comparison of randomly created toolmarks. The term individual characteristic therefore is more suited to the task at hand. Additionally the slight deviations from the AFTE glossary definition is unnecessary as it is the industry standard.</p>		Accept
106	3.4		E	<p>"Random" is a poor choice of word in this context. Subclass characteristics can be random. So the use of this word to define individual characteristics is incorrect since it can apply to both types of characteristics.</p> <p>Also, this word is not the term used to define these types of characteristics in the field, either in reports and/or court testimony. "Random characteristics" does not appear in the AFTE glossary, which is the glossary used to define terms within the field. Also, there is no solid, meaningful justification for changing this word.</p>	<p>3.4 should be revised from random characteristics to <b>Individual characteristics</b>. This is term used within the field in reports and court testimony. <b>Accidental characteristics</b> maybe be an alternative term to use as well since this has been used in the field too.</p>	Accept

125	3.4		T	Redefine Subclass Characteristics as "Level 2"	Level 2- Physical features of a tool surface that are independent of design and manufacturing decisions. These characteristics are not determined prior to manufacture and are shared among surfaces of multiple tools. Level 2 characteristics expressed as toolmarks may be used to reach opinions of different sources or opinions of insufficient support.	Reject: The consensus body does not believe the latent print terminology is appropriate for the firearms and toolmarks discipline.
151	3.4		T	Random is in the definition of individual. There is nothing wrong with individual characteristics. It is a term that has been used for decades without incident.	reinstate the OSAC definition of individual and remove random definition.	Accept with modification: the term random characteristic has been returned to individual characteristic and the definition has been revised
167	3.4		E	Use of "random" in place of "individual" is problematic and not an appropriate substitution. To quote from a draft of a paper by Buckleton, et. al from around 2005 (I can't determine at the moment if this paper was published, but can do so at a later time if needed): "[The term] Random mark...implies that these marks need to be randomly spread across the surface or to be present or absent in a random manner. However there is no requirement of true randomness for a number of these marks to allow a subjective assignment of 'same source'. As long as the correlation between marks is less than perfect then a number of them will eventually support a conclusion of 'same source'. The higher the correlation the more marks that will be required. <b>Not only is true randomness not required but it is very unlikely to be true. Any understanding of manufacturing processes such as grinding and filing suggest that the process may be significantly chaotic but not quite random. Consider the fact that some tool surfaces are heavily marked whereas others are smooth. This, by itself, suggests that the presence of one stria increases the probability of an adjacent stria.</b> " [emphasis added] I believe John Thornton wrote of a similar theme in an even earlier paper.	Use an alternative term for these types of characteristics, such as accidental, incidental, or chaotic (although this last one may have problems with connotation or perception).	Reject with modification: the term random characteristic has been returned to individual characteristic
169	3.4		T	"Random" implies to me that there is no pattern to the characteristics. And that they are not reproducible.	No matter what word is chosen, the definition needs to include the concept that the markings form a <u>reproducible pattern</u> . (This is assuming that the terms "individual" and "unique" can't be used.) Otherwise when an examiner says they based their Identification conclusion on "random characteristics" that makes it sound like the conclusion is random, too.	Reject with modification: the term random characteristic has been returned to individual characteristic
180	3.4		T	The term "random characteristics" may be confused with the phrase "random agreement," which is used to describe the small degree of coincidental correspondence that occurs between different-source toolmarks.	Use "individual characteristics" or "randomly acquired characteristics"?	Accept
181	3.4		T	In practice, the terms are used to refer to both the surface characteristics on the tool and the details in a toolmark made by those surface characteristics, the definition should reflect this.	Change to something like, "The random imperfections or irregularities of tool surfaces, as well as marks made by these features during the production of a toolmark."	Reject with modification: the term random characteristic has been returned to individual characteristic and the definition has been reworded.
208	3.4		T	The use of the word "random" is not a recommended word choice, it implies that the toolmarks that are imparted on toolmarks randomly occur. This is true for the marks left on the tool when it's manufactured, but not when that tool imparts marks onto the subsequent toolmark.	A distinction between "non-repeating" "random" (what we know as individual) and "repeating" (what we think of as subclass) needs to be made since both are "random." Using terminology such as Level 1, 2, and 3 marks might be a consideration.	Reject with modification: the term random characteristic has been returned to individual characteristic
209	3.4		T	The way this term is defined also includes subclass marks as that subclass are "random" marks as well as mentioned in the above comment.	Second sentence: These marks do not extend to the previous and/or subsequent tools during the manufacturing process	Reject with modification: the term random characteristic has been returned to individual characteristic and the definition has been reworded.

228	3.4		E	The use of the word "random" is a poor word choice, it implies that the toolmarks that are imparted on toolmarks randomly occur. This is true for the marks left on the tool when it's manufactured, but not when that tool imparts marks onto the subsequent toolmark (that's consistent). Also, trying to explain to a jury what "random corresponding" means sounds ridiculous.	If individual will not work, then possibly accidental or incidental	Reject with modification: the term random characteristic has been returned to individual characteristic
229	3.4		T	The way this term is defined also includes subclass marks	Second sentence: These marks do not extend to the previous and/or subsequent tools during the manufacturing process	Reject with modification: the term random characteristic has been returned to individual characteristic and the definition has been reworded.
250	3.4		T	Random Characteristics is not a discipline standard term. While I'm sure it appears somewhere, I have not seen it in presentations, textbooks, or journal papers. Using a non-standard term will confuse users of this document and will make it seem like the document was not written in collaboration with those within the discipline. Random isn't a great choice because subclass marks are also technically random. While individual marks are "random" by the common definition of random not all random marks are individual. I believe "Individual Characteristics" is the right choice. Individual is the term used in presentations, peer reviewed publications, text books, standards, and guidelines. Alternatively "Distincting Characteristics" could be ok, but is less standard.	Change Random Characteristics to Individual Characteristics here and throughout the entire document.	Accept
288	3.4		T	The current "Note" does not include the manufacturing process/machining process as a source of individual characteristics. The occurrence of the shearing or metal, side flow, plunging of metal, built up edge, etc are well documented (thousands of articles in peer reviewed articles in the machining community and are indeed random). It can be said that "incidental" covers that, however based on dictionary definitions, incidental is defined as "minimal". Those effects are not minimal.		Reject: the note was removed, the definition was revised, and the term incidental encompasses the manufacturing processes described
307	3.4		T	"Random characteristics" is terminology that could connote to the lay person that these characteristics reproduce randomly, and may or may not appear on items of evidence marked by the same tool, instead of being produced on the working surfaces of tools through random events.	Change random characteristics to individual characteristics through the document	Accept
312	3.4		E	"Random characteristics" is a far better and more defensible term than "individual" characteristics. Please keep this term as written.	n/a	Reject: the term random characteristic has been returned to individual characteristic
344	3.4		T	It is unknown what the meant by "Note" for your organization. Typically a "Note" is designed to help the reader understand the requirement without actually being a requirement. I think that you should incorporate the "note" into the definition. In addition, based upon this definition and the definition for subclass characteristics, subclass characteristics could also be considered random characteristics.	marks produced by imperfections or irregularities of tool surfaces which are produced incidental to manufacture and/or caused by use, abuse, corrosion, or damage and are not considered subclass characteristics	Reject with modification: the term random characteristic has been returned to individual characteristic; the definition has been revised; notes included are to clarify the definition, which follows the ASB Style Guidelines.

359	3.4		T	Individual changed to Random	Leave individual as is - Individual in describing a characteristic is referring to that one particular characteristic (one burr, one gouge, one imperfection on the surface of the tool) in my mind. It is one in a series of characteristics looked at in making a conclusion. One individual characteristic by itself means nothing. A pattern of multiple individual characteristics that reproduce from one item to another taken into consideration together means something and is significant.	Accept
364	3.4		technical	I appreciate the move away from the term "individual" and why this has been done. I agree that this is a move in the right direction. However, testifying to "agreement of random" is confusing. How do random things agree? While this tries to move the discipline away from conveying absolute uniqueness, which is a good thing, the solution presented will likely create more confusion.	Potential solutions: Accidental Characteristics; stick with "Individual"; or rename Class, Subclass, and Individual to Level I, Level II, and Level III. Using the "Level" characteristics would also be more in-line with a likelihood approach, where each level of characteristic has potential to provide some discriminatory power.	Accept with modification: the term random characteristic has been returned to individual characteristic
387	3.4		T	Why was random selected vs unique or individual? Odd that definition of random characteristics includes the word random. Marks are typically microscopic	Keep individual or unique when discussing microscopic features; or provide a clearer definition of random other than random	Accept
350	3.4		E	Definition of "random characteristics": the phrase being defined should not be part of its definition.	Pick a different word for the definition. "Unintentional" may be a better alternative. <i>Marks made by the unintentional imperfections or irregularities of the tool surfaces.</i>	Reject with modification: the term random characteristic has been returned to individual characteristic
90	3.5	now 3.6		This is an unnecessary deviation from the AFTE glossary definition. The differences are slight, but not necessary.		Reject: This definition is more precise for defining this term.
126	3.5	now 3.6	T	<b>Redefine Random Characteristics as "Level 3"</b>	<b>Level 3- Physical features of a tool surface that are independent of design and manufacturing decisions and/or caused by use, corrosion or damage. These characteristics are not determined prior to manufacture and are not shared among surfaces of other tools. Level 3 characteristics expressed as toolmarks may be used to reach opinions of different sources, opinions of same-source or opinions of insufficient support.</b>	Reject with modification: the term random characteristic has been returned to individual characteristic
127	3.5	now 3.6	T	As defined here, "subclass characteristics" also meet the definition of "random characteristics". Subclass characteristics are produced by random imperfections or irregularities of tool surfaces	Move to a 3-level nomenclature system as described above.	Reject with modification: the term random characteristic has been returned to individual characteristic
182	3.5	now 3.6	T	In practice, the terms are used to refer to both the surface characteristics on the tool and the details in a toolmark made by those surface characteristics, the definition should reflect this.	Change to something like, "Toolmarks produced during the manufacturing process that persist on a series of sequentially manufactured items fabricated by the same tool, as well as the marks made by these surface features."	Reject: The definition is clear as is.
210	3.5	now 3.6	E	The second sentence contained in the draft from OSAC is a necessary distinction should stay.	Add: "These types of characteristics are not determined prior to manufacture and may originate from a source that is more restrictive (i.e., a subset) than that of the overall class to which they belong.	Reject: That information is covered in the note of section 3.6.
230	3.5	now 3.6	E	The second sentence contained in the original draft from OSAC is a necessary distinction that needs to stay part of the definition	Add: "These types of characteristics are not determined prior to manufacture and may originate from a source that is more restrictive (i.e., a subset) than that of the overall class to which they belong.	Reject: That information is covered in the note of section 3.6.

253	3.5	now 3.6	T	The definition of subclass here is very short and not as clear or complete as the proposed definition. The current definition does not describe that the marks are virtually unchanged, that they are not intentional or determined prior to manufacture, and that they originate from a source that is more restrictive. That is, subclass marks can identify a specimen to a subset of source tools even if it can not identify it to a single source tool.	Proposed better definition: Toolmarks produced by a single tool during the manufacturing process that repeat virtually unchanged from the same tooling operation on a series of sequentially-manufactured items. These types of characteristics are not determined prior to manufacture and may originate from a source that is more restrictive (i.e., a subset) than that of the overall class to which they belong.	Reject: The definition is clear as is and the additional information is covered in section 3.6 note.
277	3.5	now 3.6	T	Technically subclass is also random	these should be noted as being random with reference to them being more restrictive	Reject with modification: the term random characteristic has been returned to individual characteristic
278	3.5	now 3.6	T	This is talking about the subclass created during manufacturing with no connection of the marks being transferred to ammunition components	A link has to be made that the sequentially manufactured items with subclass may then transfer those characteristics to a secondary item (i.e. toolmark used in comparisons)	Reject: The definition is clear as is.
308	3.5	now 3.6	T	Subclass characteristics are also made through random events through the manufacturing process and do not occur on all items that are manufactured.	Change definition to: Toolmarks that MAY arise during the manufacturing process through random means and COULD persist on two or more items consecutively manufactured.	Reject: The definition of the term does not make any implication on the probability or frequency of its occurrence.
336	3.5	now 3.6	T	The work "restrictive" in 3.1 and 3.5 should be clarified, jurors and lawyers might not know what that means		Reject: This is used as a commonly understood term. It can be explained during a testimony.
363	3.5	now 3.6	technical	The subclass definition does not note that the subclass marks eventually change, and thus are limited to a series of items.	Toolmarks produced by a single tool that repeat with little, if any, change on a limited series of sequentially manufactured items. These types of characteristics are not determined prior to manufacture, and are more restrictive than class characteristics (i.e., a subset of the class).	Reject: The definition is clear as is.
19	3.6	now 3.7	E	The phrase "drawing conclusions" is used. Under section 1 the phrase is "developing source conclusions". This should be consistent throughout the document.	Recommend the phrase "reaching conclusions" or, at the very least, some consistency.	Reject: This term is defined in the provided reference of footnote #1.



73	3.6	now 3.7		<p>“3.6 a)” et al.</p> <p>1-The use of the term “proposition” implies a numerical/statistical approach (e.g.-Bayesian) that is not universally accepted and may imply a numerical or statistical approach that is not justified in most cases. Additional language such as “strong/weak support” has a similar context but is more generic so in this reviewer’s opinion doesn’t rise to the level of being objectionable. Brilliant language that disposes of both would be a welcome improvement.</p> <p>2-The use of the term “task-relevant” to describe information is troubling for several reasons:</p> <p>There is an implication that information rationing to the examiner is an appropriate process or standard practice; this is not justified. In practice, the person most prepared/equipped to differentiate what is and is not task relevant is the trained-qualified-exper-t examiner.</p> <p>This terminology is not adequately defined. There has been some disagreement among CB members as to what does and does not constitute “task-relevant information” and the specifics of individual cases may differentiate these examples further.</p> <p>Lastly, there is a further (potential) implication that information deemed “task-relevant” may independently contribute to the assessment of the accuracy/error inherent in a specific conclusion. For example, if an unrelated forensic analysis is deemed “task-relevant” the examination process may be tainted by presumptions of the accuracy/error of that technique, thus introducing a source of bias based on the value judgement of that technique.</p>		Reject: This term is defined in the provided reference of footnote #1.
91	3.6	now 3.7		<p>a) – The use of the term “proposition” implies the application of a statistical approach such as Bayesian likelihood ratios. The use of a statistical or numerical approach is not one that is universally accepted within the firearm and toolmark discipline. Although this section does not specifically state the application of statistics, the inference can be just as strong.</p> <p>More generally to this section and the concept of “task-relevant information” and its referenced National Commission on Forensic Science document: This concept is an underlying attempt to control bias, to which I am not opposed, however attempting to put into a document what information should/shall and shall not be available to an examiner is dangerous without having sufficient data to support the inference that the information will create bias and therefore potentially affect the examiners conclusions. Each and every case analyzed by a firearm and toolmark examiner may require a different set of so called “task-relevant information”.</p> <p>This sections terminology is too vague and leaves the door open to overreaching control of information that may be necessary to an examiner’s analysis.</p>		Reject: This term is defined in the provided reference of footnote #1.
160	3.6	now 3.7	T	It is unclear what “propositions” refers to in this context as there is no further mention of propositions in the document.	Provide a definition for propositions.	Reject: This term is generic and further information can be found in the provided reference of footnote #1.

194	3.6	now 3.7	E	Might be misleading footnote meant for 3.6 (c) only. Consider adding footnote to 'task-relevant information' instead, similar to what is done for footnote 2.	Shift footnote to after 'information'	Accept
254	3.6	now 3.7	T	What is a "competent analyst"? This needs to be defined.	Define competent analyst.	Reject: The Forensic Science Service Providers (FSSP) define competence and further information can be found in the provided footnote reference #1.
255	3.6	now 3.7	T	Does information need to satisfy all three of these (a,b,c) to be task relevant or at least one of the three? I assume at least one of the three but the wording needs to change to state that.	"information that is necessary for drawing conclusions, which may include any of:"	Reject: This term is defined in the provided reference of footnote #1.
279	3.6, c)	now 3.7	E	Footnote 1 is a dead link	correct link	Reject: The link works and is accessible.
54	4		Technical	In this document, there are effectively only three conclusions that can be made, exclusion, inconclusive and Identification. However, this is very limiting as it makes the assumption that all the different class characteristics are equally distributed in the population (which they aren't, some are very common and others are very rare) and without the required amount of random characteristics they have no evidential value. The same argument can be made for a comparison where the random characteristics fall just short of the required amount for identification (or exclusion). Some toolmarks by nature produce few random features which is a characteristic that will be ignored in this document. Basically there is a lot of evidence between exclusion and identification that is being rejected. To say that a comparison that falls just short of an exclusion has the same evidential weight as a comparison that falls just short of an identification is flawed. An examiner is an expert witness and gives evidence to assist the court. This "yes", "no", "I don't know approach" provides no assistance to the courts in the case of an inconclusive finding and is very much an outdated "falling of the cliff" approach to evidence interpretation. There is a growing interest and push towards a continuous approach such as Bayes theorem, which provides more information to the courts.	There should be at least five conclusion levels in this document, such as what was originally submitted to ASB (these conclusion levels were Exclusion, Insufficient support for exclusion, Insufficient Support for Either Exclusion or Identification, Insufficient support for identification and identification.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source"
20	4.1.1		E	"The examiner shall <u>evaluate</u> the <u>value</u> of each item ..." is awkward and redundant	"The examiner shall evaluate each item ..."	Accept
365	4.1.1 (and general)		technical	The document currently reads like a test method, where examiners "shall" do this. Perhaps this was done for style guide reasons, however when looking at the ASB Friction ROC, that document simply defines the different conclusion types without reading like a test method.	Change the language to just define the different categories of conclusions, as is done in the friction ridge ROC.	Reject: Formatting is sufficient to convey what is intended for this document.
211	4.1.1, 4.1.2, 4.1.3		E	States that the examiner shall evaluate the value of each item as defined in 4.1.2 and 4.1.3; however, the terms are not definitions they are procedural. This is supposed to be a standard (framework) which procedures can then be based upon.	Terms need to be re-worded back to a definition and not a "what to do" statement. Possibly: "A decision (or judgement) rendered when an item is of not value....."	Reject: Formatting is sufficient to convey what is intended for this document.
231	4.1.1, 4.1.2, 4.1.3		E	states that the examiner shall evaluate the value of each item as defined in 4.1.2 and 4.1.3; however, the terms are not definitions they are procedural. This is supposed to be a standard (framework) which procedures can then be based upon.	Terms need to be re-worded back to a definition and not a "what to do" statement. Possibly: "A decision (or judgement) rendered when an item is of not value....."	Reject: Formatting is sufficient to convey what is intended for this document.

212	4.1.2, 4.2.2.2		T	Changing "unsuitable" to "no value" poses issues without an intermediary definition. Something can have VALUE, but still be unsuitable for microscopic comparison. For instance, a caliber may be able to be determined with a lead core (which has value), but it is unsuitable for microscopic (but could have class characteristics compared to another item). Since the "5 prong" range of conclusion originally proposed in the OSAC document was eliminated, this was an important distinction that was eliminated.	Creating a "no value" term, while still maintaining "unsuitable" to refer to the fact that a MICROSCOPIC comparison is not possible. There are times an inconclusive would not be appropriate even though there is an "absence of random characteristics." Alternatively, keeping the 5 prong inconclusive that better delineates the factors that may contribute to an "inconclusive" result.	Reject: This document is specific to microscopic comparisons. Other forms of examinations are covered in separate documents.
304	4.1.2/ 4.1.3		T	"Of value for Source Conclusion" should be changed to "Of value for Comparison" - as it stands in this document, if an item has no random/individual characteristics, yet has class information, the "of value" determination indicates that it has enough information for an examiner to make a "source conclusion". In practice, this is not the case. It has only enough information to make a source exclusion, which would be determined during a comparison of class information. The "of value for source conclusion" is ONLY made after a determination as to whether the evidence is "of value for comparison"	An assessment of value for comparison needs to proceed or replace the "of value for source conclusion" determination.	Reject: The term "source conclusion" encompasses Same Source (identification), Different Source (Exclusion), and Inconclusive conclusions
21	4.1.2		E	"The examiner shall <u>render an opinion</u> that ..." We already have "developing source conclusions" and "drawing conclusions". Consistent terminology should be used throughout the document.	Recommend the phrase "reach a conclusion" rather than render an opinion.	Reject: "Render an opinion" is consistent throughout the document and consistent with the act of reporting in both writing and oral testimony; "reach a conclusion" is implicit within the terminology.
58	4.1.2		E	Uses the term "individual" instead of "random" defined in 3.4	If "individual" is to be changed to "random" then the word "individual in 4.1.2 should say "random".	Accept with modification: the term random characteristic has been returned to individual characteristic
128	4.1.2		T	"individual" is used but not defined any longer	Insert "does not exhibit any Level 1, Level 2 or Level 3 characteristics suitable for source conclusions"	Reject with modification: the term random characteristic has been returned to individual characteristic
161	4.1.2			The last sentence in this paragraph stating "the item may have value to other paths of forensic inquiry" is unnecessary as it is not relevant if it does not fall within the scope of the standard.	Delete this sentence.	Reject: The sentence provides clarity for what "No Value (unsuitable)" means for this document.
170	4.1.2		E	and/or <b>individual</b> toolmarks suitable	replace individual with random. If that's the word that chosen.	Reject with modification: the term random characteristic has been returned to individual characteristic
171	4.1.2		T	The i.e. is not really helpful in this situation. The definition states the item lacks <b>sufficient</b> quality or quantity of features... But then the i.e. explains that the term only applies when an item has NO marks.  i.e. means "that is". "i.e." is used to <b>specify a particular meaning</b> . If you want to provide an EXAMPLE, e.g. is more appropriate here since the definition does not limit the conclusion to only when an item has NO markings.	Drop the clarification in parenthesis altogether or change the i.e. to an e.g.  Unless you are trying to limit the definition of Unsuitable to only include items that have no class, subclass, or individual. In that case, remove the word "sufficient" and reword to make that clear.	Accept with modification: The sentence was updated to read "The examiner shall render this opinion when the item lacks sufficient quality or quantity of features, size, or clarity suitable for source conclusions (e.g., an object that does not bear any class, subclass and/or specific characteristics)."
195	4.1.2		E	Different terminology used in 3.4	Change 'individual toolmarks' to 'random characteristics'	Reject with modification: the term random characteristic has been returned to individual characteristic
256	4.1.2		E	Incorerct use of i.e. Since the text does not provide an exhaustive list this should be e.g.	Change "(i.e., an object" to "(e.g., an object"	Accept with modification: The sentence was updated to read "The examiner shall render this opinion when the item lacks sufficient quality or quantity of features, size, or clarity suitable for source conclusions (e.g., an object that does not bear any class, subclass and/or specific characteristics)."

280	4.1.2		T	No value and Unsuitable are two different things	If I have a pipe that has been cut with a saw, I can say that the item exhibits characteristics consistent with having been produced with a saw but exhibit no marks of value for comparison purposes. If I receive a deformed lead core, I would say that the item appears to be a lead core but is unsuitable for further analysis.	Reject: This document defines No Value (Unsuitable) for source conclusions.
281	4.1.2		E	"...That does not bear...and/or INDIVIDUAL toolmarks..."	If there is a push to get away from individual and go to random, this one was missed	Reject with modification: the term random characteristic has been returned to individual characteristic
337	4.1.2		E	The examiner shall render an opinion that an item	This is sentence suggests that the of value decision is based on examining an item, could be confused with a tool. Suggest "The examiner shall render an opinion that a mark"	Reject: The word "item" is sufficient in context.
353	4.1.2		T	As written, this statement does not allow for the assessment of damage to the questioned item.	Include "damage" to features being assessed in terms of quantity and quality	Reject: Damage is one of many sources that could result in the features or the lack thereof that would result in a no value determination.
380	4.1.2		editorial	This document changes the title for "individual" marks, but still uses the term in 4.2.1.2.2 "...i.e., an object that does not bear any class, subclass and/or individual toolmarks suitable for...."		Reject with modification: the term random characteristic has been returned to individual characteristic
385	4.1.2		T	A No value item may still have class characteristics, but still be of no value for microscopic comparison or "source conclusions". Example a sandblasted bullet where the rifling is still visible but all the stria is gone. This bullet cannot be compared for a source conclusion (therefore it is NV) but its GRC and possible firearm info can still be given since it still has class.	Remove "class" from the list of things that object must lack in order to determine it to be NV. OR reword so it doesn't imply that you must have a lack of class in order to call something NV	Reject: The lack of class characteristics is a necessary component of a no value determination; an exclusion based on class characteristics is still a source conclusion.
218	4.1.2, Note on page 3		T	Individual characteristics is used	Be consistent throughout the document. I would prefer to keep individual characteristics, however.	Reject with modification: the term random characteristic has been returned to individual characteristic
22	4.1.3		E	"The examiner shall <u>reach a preliminary judgement</u> ..." Consistent terminology should be used throughout the document.	Recommend the phrase "reach a conclusion"	Accept with modification: Paragraph reworded to "When the examiner determines that the item under consideration has potentially sufficient class, subclass and/or random characteristics for further evaluation, examination, or comparison with other known-source or questioned-source items for potential source conclusion, the examiner shall proceed with the examinations."
92	4.1.3			Replace "random" with "individual" in line two. This will align with the use of "individual" in section 4.1.2 and my suggested edit to section 3.4 of continued use of the term "individual characteristics".		Accept
129	4.1.3		T	Use of Class/subclass/random	replace with Level 1-Level 3	Reject: The consensus body does not believe the latent print terminology is appropriate for the firearms and toolmarks discipline.
172	4.1.3		T	The definition for "Of value" items could use some clarification.	Clarify that "further evaluation, examination, or comparison with other known-source or questioned-source items for potential source conclusion" includes the possibility that an item may only have enough class characteristics to be suitable for an exclusion but may not have enough "random" characteristics to render a conclusion of identification. Kind of like latent prints has a "suitable for exclusion only" category.	Reject: An exclusion based on class characteristics is still a source conclusion; an inconclusive conclusion is still a source conclusion as well.
196	4.1.3		E	Inconsistency between 4.1.2 and 4.1.3	Change to '4.1.3 Value for Source Conclusion' Alternatively, change to '4.1.2 Of No Value ...'	Accept: 4.1.2 was changed to "Of No Value..."

313	4.1.3		T	This preliminary judgment should be accompanied with documentation of the specific features that are suitable for further evaluation prior to any comparisons. This is an essential methodological step to protect from and identify contextual bias and reverse reasoning. Thus it is appropriately addressed here even if documentation is not the focus of this standard.	Section 4.2 should be rewritten framing opinions in terms of the ability or inability to exclude a particular item as the source of marks (or ability or inability to exclude marks as coming from the same source).	Reject: the requested information can be found in other published standards and is outside the scope of this document.
338	4.1.3		E	same as 4.1.2		Reject: The word "item" is sufficient in context. Note: see line 131 comment 337 for commenter's original comment.
40	4.2		E	The conclusion scale adopted throughout Section 4.2 appears to adopt a quasi-likelihood ratio format. Although it does not explicitly mention propositions it still utilizes an approach of comparing the strength of evidence in favor of competing propositions. For example, it defines an exclusion as justified when an examiner's observations "provide very strong support that they were marked by different tools and very weak or no support that they were marked by the same tool." But despite its nods to an Ir framework, this standard commits the very sins that approach is designed to remedy, namely the standard still mandates that examiners commit the prosecutor's fallacy and transpose the conditional. By moving from merely assessing the extent to which evidence supports competing propositions to providing an ultimate opinion, this standard demands that examiners essentially conduct their own assessment of prior odds, a task that should be left to the trier of fact. See e.g., Stephen Bunch & Gerhard Wevers, "Application of likelihood ratios for firearm and toolmark analysis," 53 Sci. & Justice 223 (2013); I.W. Evett et al., "Finding the way forward for forensic science in the US- A commentary on the PCAST report," 278 Forensic Sci. Int'l 16 (2017). At bottom this standard should not try and force together a weight of the evidence approach and an approach requiring categorical conclusions. It should do away with the labels exclusion, identification, inconclusive, opinion od same source, etc...	To remedy the fallacies this standard currently demands examiners perpetrate it should either adopt a pure Ir approach where examiners do not provide ultimate source conclusions (instead merely discussing the support for competing propositions) or it should mirror the conclusion language suggested for the field of latent print comparisons in American Association for the Advancement of Science, "Forensic Science Assessments: A Quality and Gap Analysis- Latent Fingerprint Examination," Report prepared by William Thompson, John Black, Anil Jain, & Joseph Kadane, (2017). Given the widely recognized reality that jurors struggle to understand and appropriately utilize Irs, the latter approach would be the most sound. See John Buckleton & James Curran, "A discussion of the merits of random man not excluded and likelihood ratios," 2 For. Sci. Int'l Genetics 343, 344 (2008)	Reject with modification: The existing language is consistent with the AFTE Theory of Identification as well as current and accepted practice. Also, the "very strong" and "very weak" language was modified to "high level" and "low level".
45	4.2		E	Whether framing conclusions as opinion of same source, identification, or individualization, these all communicate the same thing - that one single object, and no other, left the marks at issue. Multiple groups of scientists have concluded that these kinds of source attribution statements are unwarranted.	Instead of speaking in terms of source attribution, the standard should require that conclusions be framed in terms of the ability or inability to exclude a particular item as the source of marks (or ability or inability to exclude marks as coming from the same source). This is consistent with the way opinions are framed in the DNA field, and the recommended way to frame opinions in the latent print field. "Cannot exclude" can be distinguished from "inconclusive" by referring to observed correspondence of features	Reject: The existing language is consistent with the AFTE Theory of Identification as well as current and accepted practice.
152	4.2		T	Remove KSST and KDST from document	Use terminology that is generally accepted in the field. No need to reinvent the wheel.	Reject: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match.

314	4.2		T	Specific edits to the existing text of 4.2 are provided below but the preferred approach would be to rewrite section 4.2 entirely framing conclusions as is done in the field of DNA and as is currently being recommended in the field of latent print examination. An opinion of same source, identification, and individualization all convey the impression that one single object, and no other, left the marks at issue. Instead of framing opinions in terms of source attribution, the standard should require that opinions be framed in terms of the ability or inability to exclude a particular item as the source of marks (or ability or inability to exclude marks as coming from the same source). This is consistent with the way opinions are framed in the DNA field, and the recommended way to frame opinions in the latent print field, and it is a more honest characterization of firearms examination.		Reject: The existing language is consistent with the AFTE Theory of Identification as well as current and accepted practice.
315	4.2		T	Throughout this section "same source" (or "common source") and "different source" should be used instead of "exclusion" and "identification". The definitions correctly state that these are not absolute claims but "identification", in particular, has a history of being used as an absolute identification and is understood in popular culture as an absolute identification as a result of that history. Thus, "same source" (or "common source") should be used instead and "identification" should be added to the list of prohibited terms in section 5.	Delete "identification" and "exclusion" from this section. Add identification to the list of prohibited terms in section 5.	Reject: The terms "Exclusion" and "Identification" remain in the title for the sections 4.2.1, 4.2.1.2, 4.2.3, and 4.2.3.2 as a bridge (or crosswalk) of new terminology to that represented in the current AFTE Theory of Identification.
130	4.2.1		T	If we are calling our conclusions "opinions" then there should be two categories of Exclusion. An elimination based on differences of Class is not an opinion. It is even stated as such in 4.2.1.2.1. It is contradictory to have an "opinion" of exclusion and then express it as a certainty.	Develop two categories of exclusion:  "Exclusion": an expression that it is physically impossible (i.e., zero probability) that the examined items have been marked by the same source tool based on an incompatibility in Level 1 characteristics.  "Opinion of Different Source" (Exclusion): this can remain mostly the same as it currently is written (see further comments below).	Reject: The distinctions made in the text of 4.2.1.2.1 and 4.2.1.2.2 are sufficient to describe both types of exclusions; both are still the expert's opinion
257	4.2.1		T	I am unsure why "Opinion of Different Source" is used rather than "Exclusion". Opinion of Different Source is a wordy label for this conclusion and is not consistent with the discipline. This word choice may reduce confidence in the conclusion. Note that section 4.2.2.2 refers to Identification and Elimination conclusions, so the rest of the document uses the established terminology.	Use "Exclusion". I suppose it would be ok to do this "4.2.1 Exclusion (Opinion of Different Source)" but putting the longer term in the descriptive parentheses.	Reject: The change to the terminology provides more descriptive and precise terms for those categories. The terms "Exclusion" and "Identification" remain in the title for the sections 4.2.1, 4.2.1.2, 4.2.3, and 4.2.3.2 as a bridge (or crosswalk) of new terminology to that represented in the current AFTE Theory of Identification.
316	4.2.1		E	Good use of opinion. Please keep this.	n/a	Accept

361	4.2.1, 4.2.2, 4.2.3		technical	<p>The range/scale of conclusions presented here are categorical, or in other words speak to a final opinion of whether specimens originated from the same source. This is a surprise because much of the forensic world is transitioning likelihood-ratio conclusions that speak to the strength of the evidence. As examples: see the ASB fingerprint range of conclusions; also the UK Forensic Science regulator is requiring likelihood ratios for all disciplines by 2026. Adopting likelihood ratio language puts firearm forensics on a path forward, and the same path that other disciplines are on. The language used in the ASB Firearms document speaks to the strength/probability of the hypotheses itself (e.g. These two bullets were fired in the same firearm). The document should speak to the strength/probability of the evidence (e.g. the probability of seeing the observed agreement of markings on the specimen) given opposing hypotheses. Perhaps there's concern about the 'support for same source' type conclusion, and juries over-emphasis of that, however that can be helped with example on how it should be used, and laboratories don't HAVE to use any given category; these would just be the options available to the discipline.</p>	<p>Certainly a lot of work went into this document, however, the ASB committee should consider what was given to them by OSAC, and adjust/modify that document. Or, the ASB committee can use the fingerprint (ASB) range of conclusions as a guide, which is closer to appropriate language.</p>	<p>Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc...) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.</p>
362	4.2.1, 4.2.2, 4.2.3		technical	<p>This document uses a 3-point scale. This has the effect of having a very wide inconclusive "bucket" for conclusions, and inconclusives are a significant source of criticism in firearms. The discipline could help fix this critique by using a 5-point scale, such as that proposed by OSAC and the ASB fingerprints scale. Examiners are often (rightly) hesitant to conclusively eliminate two specimens on differences of individual characteristics. Providing a category that leans towards elimination can improve the disciplines' specificity. Likewise, if examiners have features that suggest same source, but are less definitive (very unusual class characteristics, potential subclass), then the examiner should provide the trier of fact with that information and the examiner's belief of the probability of the evidence.</p>	<p>Use a 5-point scale, such as currently used by ASB fingerprints, that proposed by OSAC, or other organizations that use similar scales, such as ENFSI, New Zealand, Netherlands, Sweden, Switzerland, and soon the UK.</p>	<p>Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source"</p>
23	4.2.1.1		E	<p>"The examiner shall render an opinion that ..." Consistent terminology should be used throughout the document.</p>	<p>Recommend the phrase "reach a conclusion" rather than render an opinion.</p>	<p>Reject: "Render an opinion" is consistent throughout the document and consistent with the act of reporting in both writing and oral testimony; "reach a conclusion" is implicit within the terminology.</p>
24	4.2.1.1		E & T	<p>The second sentence reads, in part, "... provide very strong <u>support that they were marked by different tools ...</u> and very weak or no <u>support that they</u> were marked by the same tool." This is grammatically awkward. Furthermore, the examiner is now evaluating the probability of the proposition (posterior odds) rather than the probability of the evidence given proposition (likelihood ratio). There is a strong push toward likelihood ratios in forensic science, but the language in this standard moves in the opposite direction</p>	<p>Change to "... support <u>for the proposition</u> that they were ..." (Note: underline added to identify proposed changes)</p>	<p>Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc...) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.</p>
32	4.2.1.1		T	<p>Terminology such as "very strong support" and "very weak support" imply statistically-derived comparisons, which will be incorrect until such time there are relevant distributions available.</p>	<p>Remove these terms.</p>	<p>Accept with modification: The terminology was changed to "high level of support" and "low level or no support"</p>

41	4.2.1.1		E	Beyond the problems laid out in my comments to 4.2 generally, this section should not utilize the value of "very strong support." That value currently corresponds and is being widely used in the DNA context to correspond to Irs of over 1 million. See Scientific Working Group on DNA Analysis Methods, "Recommendations of the SWGDAM Ad Hoc Working Group on reporting Genotyping Results Reported as Likelihood ratios," (2019). And current studies which find false negative and false positive rates hovering around 1% cannot justify such claims.	Change "very strong support" to strong or moderate support.	Accept with modification: The terminology was changed to "high level of support" and "low level or no support"
93	4.2.1.1			Utilization of the term "very strong support" and "very weak support" once again implies a statistical approach or support for the conclusion to which we cannot support and is prohibited by section 5.2.3 of this document. Additionally referencing both of these terms in our conclusions insinuates that there is some degree of uncertainty in our opinion. If I author an opinion, I am certain in that opinion. If I am not then I will not author that conclusion and move to one of the levels of inconclusive.		Accept with modification: The terminology was changed to "high level of support" and "low level or no support"
131	4.2.1.1		T	This document has omitted the portion of conclusion definitions that states "for the proposition". I believe that it has clearly been shown by statisticians creating research and standards in our field that we must show support, or lack thereof, for the two competing propositions.  I very much like the inclusion of the two competing propositions. It demonstrates that we do not simply aim to identify items, but that we take into consideration all information and then weight the support at the end of the examinations.	Re-insert "for the proposition" so that it reads "...provide very strong support <b>for the proposition</b> that they were marked..."	Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc...) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.
162	4.2.1.1		E	It is unclear what the language "very strong" and "very weak" means, and what the threshold for this scale of support is. The same is seen in 4.2.3.1.	Take out the second sentence in both 4.2.1.1 and 4.2.3.1.	Accept with modification: The terminology was changed to "high level of support" and "low level or no support"
258	4.2.1.1		T	Why was "extremely" changed to "very"? This seems to be a small change, but I don't understand the reasoning.		Accept with modification: The terminology was changed to "high level of support" and "low level or no support"
339	4.2.1.1		E	same as 4.1.2	Replace the word item with mark	Reject: The word "item" is sufficient in context.
367	4.2.1.1		technical	The description of each type of conclusion describes a type of support for different and same source. "very strong support THAT they were marked by different tools and very weak or no support THAT they were marked by the same tool". This moves away from the OSAC document, which importantly discussed same-source and different-source as "propositions". Changing the working to "THAT they were marked" means the examiner is now judging the probability of the hypothesis/proposition instead of the probability of the evidence (e.g. the probability of the observed comparison given same source/different source propositions).	Change the language to have examiners assess the probability/chance of the evidence given source propositions. The OSAC document (while not perfect) was more in this direction. Same with the ASB fingerprints ROC document.	Reject with modification: The terminology was changed to "high level of support" and "low level or no support"
384	4.2.1.1		T	See comment for 4.2.3.1 - There should be no support present that the toolmarks came from the same tool when making an ELIM.	Remove "very weak"	Reject: An elimination can be based on differences in specific characteristics and therefore the terminology of the document is correct.



368	4.2.1.1 (and various)		technical	<p>The use of "very strong support" that ____ vs "very weak or no support ____" may suggest a likelihood ratio (LR), but there is a potential issue with the way this document uses these. LRs are an expression of odds. This means the final RATIO of the two is what is important, not each of the probabilities. When the evidence is unprobable given one proposition, however the evidence is very, very, very unprobable given the opposing proposition, then the result is a LR that is much greater favor than the other. As an example: the probability of the evidence given a proposition may "only" be 0.20 (1 in 5). However, the propability of the evidence given the opposing proposition may be 0.00001. This results in a LR of 20,000, meaning the first proposition is 20,000 times more likely vs the other, despite the probability of the numerator being only 1 in 5. The language requiring "very likely" for one and "very unlikely" for the other says that probabilities of the evidence given the propositions must BOTH cross certain thresholds before an opinion of differnt source of opinion of same source can be concluded. This is not how LRs work. It's the RATIO of the two that is important for the final LR.</p>	<p>The ASB friction ridge document is more in line with appropriate langauge, that speaks to "substantial" support for one propostion vs the other.</p>	<p>Accept with modification: The terminology was changed to "high level of support" and "low level or no support"</p>
119	4.2.1.1 Opinion of Different Source (Exclusion) - General		T	<p>If reference is being made for strong or weak support etc., reference should also be made to the examiner's opinions based on competing propositions?</p> <p>My understanding of Likelihood Ratios is that to develop an opinion of strong/weak support, two competing propositions must be established.</p>	<p>The development of these propositions by the examiner must be specifically mentioned in the document i.e., '<i>The examiner must determine two competing propositions when developing an opinion of same or different source. These propositions should indicate that (Proposition 1): the toolmark was made by the exhibit tool and (Proposition 2): the toolmark was not made by the exhibit tool</i>'</p>	<p>Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc..) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.</p>
214	4.2.1.1, 4.2.1.2.1, 4.2.2.1, 4.2.3.1		E	<p>The "An examiner shall render" reads as a procedure and not as a standard. These should be defining the terms, not stating what the examiner will do.</p>	<p>Sentences need to be reworded back to standard verbiage and not "what the examiner will do".</p>	<p>Reject: The sentence structure follows the ASB Style Guide for Standards.</p>
233	4.2.1.1, 4.2.1.2.1, 4.2.2.1, 4.2.3.1		E	<p>The "An examiner shall render" reads as a procedure and not as a standard. These should be defining the terms, not stating what the examiner will do.</p>	<p>Sentences need to be reworded back to standard verbiage and not "what the examiner will do".</p>	<p>Reject: The sentence structure follows the ASB Style Guide for Standards.</p>
215	4.2.1.1, 4.2.3.1		T	<p>The original version that contained "for the proposition" is a very important distinction between judging a proposition vs. judging the evidence</p>	<p>Refer to original OSAC document.</p>	<p>Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc..) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.</p>

234	4.2.1.1, 4.2.3.1		T	The original version that contained "for the proposition" is a very important distinction between judging a proposition vs. judging the evidence	Change it back to the original OSAC language or something similar to the fingerprint ROC document	Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc...) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.
1	4.2.1.2.1		T	The document allows for an opinion of different source to be expressed as a certainty if 'it is physically impossible (i.e. zero probability) for the examined items to have been marked by the same source tool based on an incompatibility in class characteristics.' However, in 5.2.5 states that an examiner 'shall not assert that two toolmarks originated from the same source with absolute or 100% certainty.' If an examiner cannot be certain of same source conclusions, the same must hold true for different course conclusions.	Delete 'An opinion of different source may only be expressed as a certainty if it is physically impossible (i.e., zero probability) for the examined items to have been marked by the same source tool based on an incompatibility in class characteristics' from 4.2.1.2.1.	Reject with modification: While an opinion of different source can be expressed with certainty when the class characteristics are incompatible, the sentence has been removed from 4.2.1.2.1 based on other comment resolutions.
59	4.2.1.2.1		T	remove "(i.e. zero probability)". We aren't currently using probabilities in the discipline so this sounds confusing.	Remove (i.e., zero probability)	Accept with modification: The sentence was removed based on other comment resolutions.
163	4.2.1.2.1		E	The language used in this paragraph, namely "physically impossible" and "zero probability", is too extreme. Furthermore, this contradicts section 5.2.2 where it states, "An examiner shall not assert that examinations conducted in the forensic firearms/toolmarks discipline are infallible or have a zero error rate."	Delete the second sentence.	Reject with modification: While an opinion of different source can be expressed with certainty when the class characteristics are incompatible, the sentence has been removed from 4.2.1.2.1 based on other comment resolutions.
173	4.2.1.2.1		T	The use of "zero probability" conflicts with 5.2.3.	Remove the phrase in parenthesis. The statement "An opinion of different source may only be expressed as a certainty if it is physically impossible for the examined items to have been marked by the same source tool based on an incompatibility in class characteristics." stands on its own. It does not need clarification.	Accept with modification: The sentence was removed based on other comment resolutions.
197	4.2.1.2.1		T	Suggest to harmonize and use the term 'exclusionary difference' instead, as defined in documents like the OSAC Guide for Interpretation and Reporting in Forensic Comparisons of Trace Materials & ASTM E3260	Change 'demonstrable incompatibility' to 'exclusionary difference'. The definition of 'exclusionary difference' as provided in the aforementioned documents may be included as a note to 4.2.1.2.1	Reject: "Demonstrable incompatibility" clearly describes the different source opinion without an additional term in the definitions or requiring the reader to access other documents.
216	4.2.1.2.1		T	The use of the word incompatibility seems an odd choice. I don't think that examiners look at things as being compatible vs incompatible. We look at similarities/agreement and differences/disagreement. The definition of incompatible talks about existing together or living together harmoniously. An example in firearms examination of "compatibility" would be if ammunition is able to be fired in a gun or not, not if two items exhibit similar characteristics. Differences are a point or way in which things are not the same.	Change incompatibility to differences, also change compatibility to similarities or consistent with. Or leave verbiage the same as what is commonly accepted in the field currently - "agreement" and "disagreement."	Reject: "Demonstrable incompatibility" clearly describes the different source opinion when there is a physical impossibility for the items to have originated from the same source.

235	4.2.1.2.1		T	The use of the word incompatibility seems an odd choice. I don't think that examiners look at things as being compatible vs incompatible. We look at similarities and differences. The use of the word incompatibility would be more appropriate when talking about when two people can't get along. The definition of incompatible talks about existing together or living together harmoniously. Differences are a point or way in which things are not the same.	Change incompatibility to differences, also change compatibility to similarities or consistent with	Reject: "Demonstrable incompatibility" clearly describes the different source opinion when there is a physical impossibility for the items to have originated from the same source.
183	4.2.1.2.1		T	The phrase "(i.e., zero probability)" incorrectly implies statistically-derived information, whereas implications of statistical derivation is explicitly disclaimed elsewhere.	Remove phrase "(i.e., zero probability)" .	Reject with modification: While an opinion of different source can be expressed with certainty when the class characteristics are incompatible, the sentence has been removed from 4.2.1.2.1 based on other comment resolutions.
25	4.2.1.2.1 4.2.1.2.2		E	"An examiner shall <u>render an opinion...</u> " Consistent terminology should be used throughout the document.	Recommend the phrase "reach a conclusion" rather than render an opinion.	Reject: "Render an opinion" is consistent throughout the document and consistent with the act of reporting in both writing and oral testimony; "reach a conclusion" is implicit within the terminology.
237	Note on page 3		T	use of individual characteristics is used	Be consistent throughout the document. I would prefer to keep individual characteristics, but if that's not a possibility I would prefer accidental, incidental or use the level 1, 2, 3 type of detail that fingerprints use.	Accept
26	4.2.1.2.2		E	The words "such that the excluded toolmarks" are unnecessary and add to an already overly long sentence	Recommend "... potential subclass characteristics <del>such that the excluded toolmarks</del> fall outside the range of ..."	Accept with modification: this sentence was reworded.
27	4.2.1.2.2		E	The second paragraph in this section(beginning with "Task-relevant ...") is awkwardly worded	Possible rewording: "Task-relevant information, including but not limited to the following, should be considered when determining if differences observed in the comparison of two toolmarks support an opinion of different source:"	Accept
33	4.2.1.2.2		T	While not strictly required, this section would be improved by addition of more information about circumstances that can potentially lead to false eliminations, particularly since more recent research suggests that this is the more common error and similar admonitions are made with regard to exclusions on individual characteristics and identifications.	Add something like, "It should be noted that poor rifling engagement, some relatively higher-velocity, lower-bullet-weight loadings, and lead bullets can produce misleading rifling widths. Variations in firing pin impression depth may cause misleading variation in impression widths. Phenomena such as "anvil bounce" may cause the appearance of a firing pin impression to vary from that of the firing pin. Primer sealant and transient debris may cause impressions on the primer which vary from those produced by the firearm."	Reject: this is outside the scope of this document.
60	4.2.1.2.2		E	KSST and KDST should be changed to KM and KNM if those terms are changed. Also consider removing the two examples given under 4.2.1.2.2 as they are long and kind of awkward examples.	Terminology of KM and KNM is preferred. Remove both examples in this section, or make them more readable.	Reject: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match. The examples are helpful and relevant to the section.
74	4.2.1.2.2			"4.2.1.2.2 a) last bullet item" As stated previously (3.4 above); recommend adding changing to "- history of the tool and mark, to the extent. . ."		Reject with modification: the a and b section headers were changed as follows: a) when examining a suspect tool: b) when examining questioned toolmarks:
94	4.2.1.2.2			Replace "random" with "individual" on line two, for the reasons outlined above in my comments for section 3.4 and 4.1.3. The use of "Task-relevant information" at the beginning of paragraph two may require change if section 3.6 is altered/re-defined based on my comments and potentially the comments of others.		Accept: Individual characteristics Reject: the use of "task-relevant information" is integral to this section.

164	4.2.1.2.2		E	This section states that an examiner may render an exclusion decision "based on the observed features, task-relevant information, and the cumulative results of training and other professionally obtained knowledge (e.g., published in peer-reviewed journals)." This standard for exclusions is exceedingly high and based on disagreement "known to have been produced by different tools."	The segment stating, "based on observed features, task-relevant information, and the cumulative results of training and other professionally obtained knowledge (e.g., published in peer-reviewed journals)" should be changed to "based on the correct application of a validated method". The same edit should be made in section 4.2.3.2 for source inclusion as well.	Reject: the criteria is appropriately worded.
198	4.2.1.2.2		T	Conceptually, examiners should be looking out for differences in class characteristics and seek to discriminate, rather than to look for similarities/compatibility.	Change to: If <b>no exclusionary differences are found in all discernible class characteristics</b> , an examiner shall render an opinion of different source only if ...	Reject: compatible and incompatible is consistent wording for this document.
199	4.2.1.2.2		E	For subclass/random characteristics, change to 'disagreement' to be consistent with phrasing for KDST. Change 'individual' to 'random'	(line 2) ... if there are demonstrable <b>disagreements</b> in random or potential ... (NOTE after 'history of tool') ... based on <b>disagreement</b> in <b>random</b> characteristics, ....	Reject with modification (line 2): the first sentence in 4.2.1.2.2 was reworded for clarity.
200	4.2.1.2.2		E	Missing commas	(line 3) subclass characteristics, such that .. (line 9) ... opinion of difference source, including ...	Accept with modification: line 3, the comma was added; the paragraph was re-written and line 9 is no longer in it.
201	4.2.1.2.2		E	Suggest edit for clarity	ability of the tool to consistently reproduce the random characteristics	accept
202	4.2.1.2.2		E	The evaluation of potential changes due to 'use/abuse/abuse' is covered by the previous points of 'potential alteration to the tool working surface' and 'condition of the tool working surface or substrate'. The main focus in this bullet point should be on the history of tool and time interval that has lapsed.	Drop 'due to use, abuse, or corrosion'.	Reject: "Use, abuse, or corrosion" gives the reason of why the history of the tool is important and why the specific characteristics can change.
203	4.2.1.2.2		E	Suggest to use 'exclusionary difference' rather than 'same class characteristics', and 'no significant agreement' to 'disagreement'	(EXAMPLE for b) ... a bullet having <b>no exclusionary differences in discernible</b> class characteristics but displaying <b>disagreement</b> of random characteristics with ...	Accept with modification: sentence was re-worded to say "...no exclusionary differences in the discernible class characteristics but displaying sufficient disagreement...."
225	4.2.1.2.2		T	Repeated reference to considering time between crimes and gun recoveries. This should have little to no impact on analysis and considerations within a case. A firearm can corrode almost immediately if exposed to certain environmental conditions such as saltwater, and have no changes for decades if in an environment that is neutral to metal/tools. Changes to a tool working surface can also be made within minutes if an individual is attempting to obliterate markings. While there may be some instances in which this may be beneficial to the case, they are few and far between.	Remove all references in this section and document to considering time between crimes and/or gun recovery.	Reject: temporal information may be of use, particularly with elimination decisions.
259	4.2.1.2.2		E	The sentence "Task-relevant information should be considered when determining if differences observed in the comparison of two toolmarks support an opinion of different source including but not limited to the following: " may not be grammatically correct. The including but not limited seems incorrect.	Potential fix: "Task-relevant information should be considered when determining if differences observed in the comparison of two toolmarks support an opinion of different source. These include but are not limited to the following: "	Accept
260	4.2.1.2.2		E	In the example of steel hammer and carbide nails. I don't know how you remove nails with the face of a hammer, so maybe something got edited incorrectly.	Perhaps the authors meant the claw of the steel hammer?	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
282	4.2.1.2.2		E	The examples make the section too long	Move to an appendix	Reject: the examples are in the appropriate locations for this document.

289	4.2.1.2.2		T	The example in this section is not only unlikely, is it impossible. There are no such thing as carbide nails. Carbide is brittle by its' nature. Trained firearm examiners should know that if they have had any manufacturing/machining training. Secondly, IF carbide nails existed, how would someone remove them using the face of the hammer? A carpenter in the jury would laugh at this example and dismiss the entire document.		Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
295	4.2.1.2.2		E	Relative hardness of the tool seems relatively self-explanatory	Remove example	Reject with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
345	4.2.1.2.2		E	(e.g. published in peer-reviewed journals) seems to be a narrow example. Are there not other valid ways to gain "other professionally obtained knowledge"? How about information from a text (not peer reviewed), observations of colleagues, conversations with other professionals, etc.	...based on the observed features, task-relevant information, and the cumulative results of training and other professionally obtained knowledge.	Accept with modification: the paragraph was re-written and no longer includes this sentence.
366	4.2.1.2.2		technical	The relative hardness example seems like a once-in a lifetime, or even impossible scenario. Carbide nails? Carbide is very hard, and brittle, this seems like an unlikely metal to use for nails. Carbide is used for things like drill bits, and nails are 99.99% of the time made from steel. This needs a new example.	A rifle is submitted for examination and it is known/assumed hundreds of steel-jacketed bullets have been fired through the barrel prior to collecting test fires. An examiner may be cautious to eliminate based on differences of (individual, Level III, etc) characteristic because the relative hardness of the steel bullets has potential to alter the imperfections on the interior of the barrel after the hundreds of shots.	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
379	4.2.1.2.2		editorial	This document changes the title for "individual" marks, but still uses the term in 4.2.1.2.2 "...warranted based on differences in individual characteristics, investigative details relating...."		Accept with modification: the term random characteristic has been returned to individual characteristic
390	4.2.1.2.2		T	What is range of variability? Where is this defined?	Define it	Reject: Determining the range of variability found between toolmarks created by the same tool is part of the training process and outside the scope of this document.
217	Example under 4.2.1.2.2 a)		T	If examples are going to be provided, especially in a standard, they should be carefully considered and not erroneous. A hammer FACE would not remove nails of any type.	Change this to an example seen commonly in casework.	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
236	Example under 4.2.1.2.2 a)		T	First off, do carbide nails even exist, I've never heard of any and none came up when I did a google search. The only thing close was the type used in car/bike tires for better traction in snow and they're screw not nails. Carbide is used for drill bits. Second, if you're forcibly removing nails from a window frame wouldn't you use the claw and not the hammer face? Thirdly, can't a more appropriate, common occurrence example be used.	Change this to an example seen commonly in casework	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
120	Para 4.2.1.2.2 (a)		T	Remove '... evidence of potential alteration to the tool working surface (e.g., fresh grinding or filing marks)' from the Criteria for Exclusion?	If there is evidence of fresh grinding etc. the toolmarks cannot be included or discounted as from a different source. In this instance, would a tool that has been ground/filed even make it past the <i>Value Determinations</i> stage at <b>paragraph 4.1</b> ? I would have thought the exhibit would be <i>Unsuitable for Source Conclusions</i> ( <b>para 4.1.2</b> ) and therefore needs to be removed from the Criteria for Exclusion.	Reject: Any evidence of potential alteration to the tool is task-relevant information when determining whether differences seen are sufficient for an elimination.

121	Para 4.2.2.2 (d)		T/E	Add the terms <i>filing/grinding</i> from 4.2.1.2.2 (a), to 4.2.2.2 to make this paragraph more detailed?  Add <i>wear and corrosion</i> to paragraph 4.2.2.2 for consistency with 4.2.1.2.2(a) oo.	Add <i>filing/grinding</i> to sub para 4.2.2.2 to make this paragraph more detailed?  Add the terms <i>wear and corrosion</i> and/or <i>condition of the tool working surface or substrate</i> (e.g., <i>visible rust or corrosion</i> ) to paragraph 4.2.2.2 for consistency with 4.2.1.2.2(a).	Reject: 4.2.2.2 ( c ) "damage" represents both suggested additions.
132	42.1.2.2 (a)		T	"fresh" is a very subjective term that is not defined in this document. Also filing and grinding are not the only ways in which a firearm could be altered. I see that this is a e.g. instead of an i.e. but still I do not believe that this addition add much clarity.	omit the parenthetical remark "fresh grinding or filing marks" from the text.	Accept
133	42.1.2.2 (a)		T	use of "random"	replace with "Level 3 characteristics"	Reject with modification: the term random characteristic has been returned to individual characteristic
134	42.1.2.2 (a), bullet #4 Example		T	How do you remove nails with a hammer face? Also this example only discusses the difference between a tool and the toolmark substrate. This could easily be added to the definitions section	<b>Toolmark Substrate:</b> A surface contacted by a tool where a toolmark is potentially imparted. The relative hardness of this substrate in relation to the suspected tool should be considered during the process of test-toolmark creation and comparison of Level 1-Level 3 characteristics.	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
135	42.1.2.2 (a), bullet #5 and Note		T	The note on this fails to add any additional clarification. It is mostly repeating what is already in the preceeding information.	Omit note attached to bullet #5	Reject: The bullet # 5 note adds potential context in regards to investigative information while bullet # 5 is more generic.
136	42.1.2.2 (b), bullet #2 and example		T	This example is very wordy and can be pared down considerably to improve clarity	Replace example with, "Example: A group of four questioned bullets concluded as fired from the same unknown firearm is compared to a bullet exhibiting similar Level 1 characteristics and dissimilarities in Level 3 characteristics with the aforementioned group. The fifth bullet may justifiably be excluded to the group of four bullets, when considering the previously mentioned factors."	Reject: the current example is more descriptive of the process of elimination.
352	4.2.1.2.2 a)		T	This is a weird place for such an example. An oddball example of TM examination belongs in a training manual, not the section of a Standards Document highlighting conclusions.	delete this crappy example; put it in a training manual	Reject with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
388	4.2.1.2.2 a)		E	Poor example of tool working surface - face of hammer not used to remove nails	Use example that is accurate to example	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
305	4.2.1.2.2 a) (4th example under header a)		T	The example of the consideration of the relative hardness of an item does not support the section that is under. This is a consideration for comparisons/the production of known toolmarks for comparisons, but it does not support the considerations as to the criteria for exclusions.	Relative softness/hardness should be considered in that it is reflective of the amount of transfer can be expected when making marks with a known tool. I do not think that this needs an example can stand on its own.	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
306	4.2.1.2.2 a) (5th example under header a)		T	The note under this example uses the term "individual characteristics" and deviates from the "random" characteristics terminology	Remove the term individual characteristics for consistency	Reject with modification: the term random characteristic has been returned to individual characteristic

28	4.2.1.2.2 a) EXAMPLE		T	<p>The example under relative hardness of the tool working surface or substrate involving carbide nails is unrealistic. I am unable to locate carbide nails for sale, nor do I believe carbide nails have been used around windows. The metallurgical properties of metallic carbides (e.g. tungsten carbide or titanium carbide) are unsuitable for use as construction nails.</p> <p>Furthermore, I believe this example is off-topic. In this example the roles (tool vs. workpiece) changed, but that is not a realistic example of relative hardness being task relevant for the purposes of reaching an exclusion conclusion. Relative hardness is task-relevant when, for example, the tool is not much harder than the workpiece, such that the tool is damaged each time it is used to act upon the workpiece. Since the tool was damaged when last used it has changed and is expected to produce different test marks. I have experienced this when comparing bolt cutters to hardened steel shackles of padlocks. The working surfaces of the bolt cutters changed with every shackle cut.</p>	Use a plausible and on-point example, such as the bolt-cutter scenario I provided, or forego any example here.	Accept with modification: example was altered to the following - "A bolt cutter was used to cut the hardened steel shackles of padlocks. Since the tool is not much harder than the workpiece, the tool is damaged each time it is used to act upon the workpiece. Therefore, the tool may exhibit changes from that damage in the test marks produced."
261	4.2.1.2.2 b		E	The final example has a funny symbol (looks like a strikethrough?) above the comma after the word scenes.	Typographical fix	Accept: strikethrough was removed
34	4.2.1.2.2 b - 2 <sup>nd</sup> paragraph		E	This phrase is potentially confusing in a problematic way, owing to the convention of referring both to the surface features of a tool and the marks made by those features using the same term: "...that they represent a reliable range of variability of random characteristics arising from the same source tool."	"...that they represent a reliable range of variability in the <b>reproduction</b> of random characteristics arising from the same source tool."	Reject: The sentence is understandable as written and adding "in the reproduction" does not add value to the statement.
35	4.2.1.2.2 b – Example		T	Advocating for exclusion on the basis of a lack of agreement instead of disagreement seems like a dangerous precedent.	"...but displaying significant <b>disagreement</b> of random characteristics with the aforementioned group;"	Accept with modification: sentence was re-worded to say "...no exclusionary differences in the discernible class characteristics but displaying sufficient disagreement...."
115	4.2.1.2.2 Criteria for Opinion of Different Source (Exclusion)		T	As above at #1 (Does the discipline want to move away from the Known Non-Match (KNM)/KDST concept, as most examiners cannot remember their actual best KNM or do not physically refer to it during microscopic examinations?)	As above at #1 (Remove this KDST concept, with no alternate information required.)	Reject: The basis of a firearm/toolmark examiner's training is examination of known same source and known different source toolmarks. It would be inappropriate to remove the known different source toolmark concept from this document. The term "best KNM" is not in this document but it originates in the AFTE theory of identification.
117	4.2.1.2.2(a) Inconclusive General		T	Reference be made to the manufacturing processes.  Task Relevant information needs to include additional considerations.	Reference be made to the general and specific manufacturing processes, such as firearm component manufacture and processes which can lead to random characteristics being produced on the tool. These processes should include metallic crystal structure, chip formation and Built-Up-Edge in barrel manufacture.  Secondly, Task Relevant information needs to include considerations related to the subsequent wear and usage of the tool during its lifetime.	Reject: The level of requested detail is outside the scope of this document.  Reject: This is covered under history (5th bullet point).
178	4.2.1.2.2(b)		wording	"e.g." means for example, there is no need to include "or" between the 2 examples. This has the potential to cause confusion and give the appearance that these are the only 2 possibilities when they may not be.	remove "or"	Accept: "or" was removed to leave just a comma.
226	4.2.1.2.2(b)		E	Erroneous dash at the comma after "crime scenes"	remove "dash" above comma	Accept: dash was removed.

2	4.2.1.2.2. b) Example		T	Without a submitted firearm and a bore cast to examine for potential subclass characteristics, it is not possible to determine the potential for subclass characteristics by merely examining fired bullets; therefore, the example where four questioned bullets could be identified as having come from the same source would not be possible because subclass characteristic carryover cannot not be excluded.	Change the example to fired cartridge cases, which do not have the limitations of fired bullets. Potential subclass characteristics on fired cartridge cases can be observed on the fired cartridge cases without casting the breech or firing pin of the firearm.	Reject: bullets can still be identified to one another without having a firearm present to examine.
9	4.2.1.2.2.a.E EXAMPLE		T	It is weird that the example presupposes knowledge of the criminal activity. In what casework scenario would the examiner know the criminal activity in this way?	Edit example to not presuppose knowledge of the criminal activity.	Accept: the example was reworded based on earlier comment.
351	2.1.2.2.; 4.2.3.2		T	Use of the word "compatible." Definition of "compatible" here being likened to "in agreement with," which I don't believe are interchangeable. Compatible, to me, indicates that two or more things are able to work with each other, such as ".45 Auto ammunition is compatible with .45 Auto caliber firearms." Or, "they are compatible roommates."	Revert to use of "in agreement [with]"	Reject: The context surrounding the word "compatible" clarifies and justifies its use in this sentence regardless of the nuances of its formal definition.
346	4.2.1.2.3		E	(e.g. published in peer-reviewed journals) seems to be a narrow example. Are there not other valid ways to gain "other professionally obtained knowledge"? How about information from a text (not peer reviewed), observations of colleagues, conversations with other professionals, etc.	...based on the observed features, task-relevant information, and the cumulative results of training and other professionally obtained knowledge.	Accept with modification: That part of the sentence was already removed.
31	4.2.2		T	The inconclusives listed under the AFTE range of conclusions (aka inconclusives a, b, and c) have all been lumped into one general inconclusive in this document. In other words, the AFTE 5-point scale has been reduced to a 3-point scale. This may result in relevant, and possibly exculpatory, information not being reported (e.g. some disagreement of individual characteristics, but insufficient for an elimination).  The current (01/05/2022) draft of ASB Standard 013 (Standard for Friction Ridge Examination Conclusions) includes a 5-point scale, with three different types of inconclusives. See 4.3, 4.4, and 4.5.  Though friction ridge and firearms/toolmarks are different disciplines they are closely related. There should be consistency wherever possible, and this is an area where it is not only possible, but appropriate. The document submitted to the ASB by the OSAC included a 5-point scale.	Return to the 5-point scale as included in the document submitted to the ASB by the OSAC. That document was well-worded and well-thought out.  Also, I recommend considering the use of a diagram, as is contained in the current (01/05/2022) draft of ASB Standard 013 (Standard for Friction Ridge Examination Conclusions). A diagram such as this may help to illustrate the range of conclusions possible and how they relate to one another.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source"; the conclusion scale does not need a diagram.
67	4.2.2		T	The inconclusive section is in direct conflict with the AFTE's 5 point scale where inconclusives are separated into three distinct conclusions. Boiling down the three point scale into one with a narrow list of criteria does not portray the amount of effort an examiner goes through during their analysis. It also does not juxtapose the different propositions that the examiner considers during their analysis.	Model back to the 3 levels of Inconclusive. 1) Some agreement of individual characteristics and all discernible class characteristics, but insufficient for an identification. 2) Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. 3) Agreement of all discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."



82	4.2.2			I would like to comment that I support the change to a three conclusion scale and the removing of the insufficient support for exclusion and insufficient support for identification. I think that this helps with consistency in conclusions and will reduce the overstating of what the conclusion means.		Reject: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
108	4.2.2		E	<p>This sections seems appears to have removed the three possible levels of an inconclusive result as outline in the OSAC document and in AFTE's Range of Conclusions.</p> <p>AFTE's range of conclusions has been the bases for conclusions drawn within the field since it was adopted by the Association. The OSAC document also includes, defines, and explains these levels of inconclusive. I believe it is important to continue to have a range of inconclusive that mirror the format established by AFTE, since this has been the <i>standard</i> for a number of years</p>	Revise section 4.2.2 to reflect a range of inconclusive results that mirror the AFTE Range of Conclusions and the OSAC document.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
137	4.2.2		T	<p>There should be room for multiple levels of inconclusive as long as the levels are properly defined and differentiated from each other. This will be more important when score based likelihood rations enter into the discipline. If a KSST scores somewhat low and is below the "best known non match" it may be useful to say that while there was insufficient support for an identification, the likelihood of seeing that score given that the items were marked by the same tool is x versus the likelihood of seeing that score given that the items were marked by different tools is y. The issue is that examiners may be overvaluing detail and hastily concluding INCON-A. This is a training issue and not a stanardization issue.</p>	<p><b>"Insufficient Support for the Opinion of Different Sources"</b>  The observed Level 1 characteristics of the items in question are in agreement and the observed differences of Level 3 characteristics are insufficient for "Opinion of Different Sources". The observed toolmarks provide some support for the proposition that they were marked by different tools and negigible support for the proposition that they were marked by the same tool.</p> <ul style="list-style-type: none"> <li>•Criteria for "Insufficient Support for Opinion of Different Sources"</li> </ul> <p>"Insufficient Support for the Opinion of Different Sources" conclusion is justified when, in the examiner's opinion, there is:</p> <ol style="list-style-type: none"> <li>1.Agreement of all discernible Level 1 characteristics AND</li> <li>2.Dissimilarity of Level 3 characteristics but insufficient for "Opinion of Different Sources"</li> </ol> <p><b>"Insufficient Support the Opinion of Same Source"</b>  The observed Level 1 characteristics of the items in question are in agreement and the observed similarities of Level 3 characteristics are insufficient for "Opinion of Same Source". The observed toolmarks provide some support for the proposition that they were marked by the same tool and negligible support for the proposition that they were marked by different tools.</p> <ul style="list-style-type: none"> <li>•Criteria for "Insufficient Support the Opinion of Same Source"</li> </ul> <p>"Insufficient Support the Opinion of Same Source" conclusion is justified when, in the examiner's opinion, there is:</p> <ol style="list-style-type: none"> <li>1.Agreement of all discernible Level 1 characteristics AND</li> <li>2.Agreement of limited Level 3 characteristics but insufficient for "Opinion of Same Source".</li> </ol>	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."

168	4.2.2		technical	<p>Despite early data from validation studies showing that examiners may not make consistently accurate conclusions when choosing between three inconclusive options (especially when leaning towards an ID), I think the ASB should stick with the 5-point scale of conclusions as proposed by OSAC. The large Inconclusive category contained in the proposed 3-point scale does not allow examiners to communicate to stakeholders when additional information exists that may justify weighting an inconclusive opinion in one direction or the other. It also appears odd that the FATM discipline is moving from a 5 to a 3-point scale while the friction ridge discipline is doing the opposite. Under the current AFTE Range of Conclusions, those laboratories or examiners that feel it cannot be justified to lean one way or the other can issue an Inconclusive (AFTE 2b) opinion while those that feel the need to use all three inconclusive categories (as appropriate) can do so. If all examiners were limited to only one Inconclusive category, then the trier of fact may be missing out on important information in some cases. More data is needed on the true accuracy of examiners when using a 3-point inconclusive scale, although more/better training on the application of this scale is warranted too.</p>	Add back in the three Inconclusive conclusion categories.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
193	4.2.2		Technical	<p>Inconclusive results become far less useful when evaluated/reported as outlined in this document. Often times in practice, it is very useful to qualify the inconclusive result (IE: Insufficient but suggestive of ID or Elimination). While it is not always prudent, removing the ability to do so may force Examiners into a position where they are not fully stating the findings of the comparison. It may be the truth but it is not the whole truth.</p>	Suggest returning to the 5pt conclusion module.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
262	4.2.2		T	<p>This document proposed a 3 point range of conclusions. Most labs do not use a 3 point range of conclusions and the AFTE RoC is a 5 point scale. Serious consideration should be given to 3 vs 5 especially since it would have major, potentially negative, effect.</p>	Rewrite to use a five point range of conclusions.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
358	4.2.2		T	<p>I have difficulty trying to understand why the five level scale of conclusions defined in the original OSAC draft has given way to a three level scale of conclusions in this ASB document. Three possible categories for inconclusive is a useful scale that would enable examiners to represent more accurately their level of certainty than a single statement of inconclusive. In Europe, the ENFSI uses a 13 level scale of conclusions to characterize likelihood ratio. 13 levels may be overkill, but firearm examiners need more than the three (ID, inconclusive, and exclusion).</p>	Rewrite section 4.2.2 so that it again includes three levels of inconclusive, harmonized with the original OSAC draft.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
184	4.2.2		E	<p>There is inconsistency in this heading compared to 4.2.1, 4.2.3.</p>	Change to "Opinion of Inconclusive".	Accept: changed to Opinion of Inconclusive
95	4.2.2.1			<p>Replace "random" with "individual" in line three, for the reasons outlined above in my comments for section 3.4 and 4.1.3.</p>		Accept

96	4.2.2.1			<p>Section 4.2.2 does not address the use of multiple levels of inconclusive as outlined in the AFTE Range of Conclusions and utilized by laboratories around the world. I feel that it is absolutely necessary for firearm and toolmark examiners to have a range within the inconclusive conclusion category. There are all too many instances when an examiner is analyzing items of evidence to where an Identification or Exclusion cannot be reached, however the evidence still possess levels of individual characteristic agreement or disagreement beyond that seen in a known match or known non-match. Without having the ability to note and report more than just "inconclusive" would prevent firearm and toolmark examiners from providing the best answer possible to our customers. Our job is to be unbiased observers of the evidence. A perfect example of this arose in my laboratory just a few weeks ago where a request was submitted to compare a bullet from a scene to two different firearms (different brands). Both firearms possessed the same class characteristics as the evidence bullet. A direct comparison was conducted and all results fell within the Inconclusive range, however one firearm possess some agreement with the individual characteristics seen on the evidence bullet, and the other firearm demonstrated some disagreement with the individual characteristics seen on the evidence bullet. Without having the ability to document and report these differences, both firearms would have been merely reported as just inconclusive to the evidence bullet, therefore allowing no differentiation for our customers as to which firearm could have fired the bullet.</p>		<p>Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."</p>
204	4.2.2.1		E	Suggest the use of 'exclusionary difference' instead	... when there <b>are no exclusionary differences</b> in discernible class characteristics,	Reject: the terminology is appropriate for this document.
205	4.2.2.1		T	Not really about insufficient (quantity) of random characteristics, but that insufficient agreement/disagreement were observed?	..., but <b>there are insufficient agreement or disagreement of random characteristics of the items in question</b> to support either that ...	Accept with modification: wording changed to "but there is insufficient agreement or disagreement of the specific characteristics observed on the items in question to support either"
263	4.2.2.1		T	This is a fine point. The text says " the observed random characteristics of the items in question are insufficient to support either that the items were marked by the same tool or that the items were marked by different tools." this can be tightened a bit to explicitly mention the proposition. That is "that the items were marked by the same tool" is a fact, but we're talking about the conclusion (or proposition). That is right now we say "insufficient to support fact X" but we should say "insufficient to support proposition X" or "to support finding X" or "to support opinion X". Right now it's close but not exactly right.	Fix for this and the next comment: "An inconclusive opinion is justified when there is agreement of discernible class characteristics, but the observed random characteristics and subclass characteristics of the items in question are insufficient to support the proposition that the items were marked by the same tool or the proposition that the items were marked by different tools. "	Reject with modification: wording changed to "but there is insufficient agreement or disagreement of the random characteristics observed on the items in question to support either"; this document does not use the term proposition.
264	4.2.2.1		T	Needs to include subclass. Differences in subclass can be used to eliminate. The elimination section 4.2.1.2.2 mentions subclass.	Fix for this and the previous comment: "An inconclusive opinion is justified when there is agreement of discernible class characteristics, but the observed random characteristics and subclass characteristics of the items in question are insufficient to support the proposition that the items were marked by the same tool or the proposition that the items were marked by different tools. "	Accept with modification: Added under 4.2.2.2 "f) potential subclass characteristics."

283	4.2.2.1		T	No mention of subclass influence	If an examiner can discern that subclass carryover is possible and that it could negatively impact the conclusion, Inconclusive is appropriate	Accept with modification: Added under 4.2.2.2 "f) potential subclass characteristics."
369	4.2.2.1		technical	"...but the observed random characteristics of the items in question are insufficient to support either THAT the items were marked". This language, and the use of "that" changes the meaning, seeking the examiner to judge the probability of the hypothesis and not judge the probability of the evidence. While this might seem meaningless, it does matter to the overall framework and approach to an examiner's mindset and analysis. Current trends and academic writing are moving away from what the ASB has suggested here.	Language should have examiners assess the probability of the evidence given (source) propositions. Current language, as shown here, has the examiner assess the probability of the proposition.	Reject with modification: the word "that" was removed from the sentence. The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc...) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.
15	4.2.2.2		T	The following statement needs editing or a caveat added: " <i>An examiner shall conclude that there is insufficient support for either an identification or elimination when any of the following (non-exhaustive) conditions apply: damage</i> "	Frequently tools or the items bearing toolmarks received in the lab are heavily damaged. Damage <i>may</i> preclude the possibility of a source identification or elimination being made. However, based on the statement as it is currently written, if an item comes in damaged an inconclusive result must be rendered.	Accept with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"
36	4.2.2.2		T	Several of the entries are factors that might contribute to a lack of sufficient agreement/disagreement or an inability to discern if there is sufficient agreement/disagreement, rather than situations inherently demanding an inconclusive conclusion (e.g. dictating that an examiner shall conclude an exam is inconclusive simply because there is damage is very bad).	"a) an absence of random characteristics; b) insufficient agreement, or insufficient disagreement, of random characteristics;  A lack of sufficient agreement/disagreement or an inability to discern sufficiency of agreement/disagreement may result from the following: damage, lack of reproducibility of random characteristics, poor sample quality, limited sample size."	Accept with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"
46	4.2.2.2		E	"Identification" and "elimination" are not categories in this document, and should not be used in this section	Change "identification or elimination" to "opinion of same source or opinion of different source" (or any revision made away from source attribution)	Accept with modification: "identification or elimination" was changed to "an opinion of same source (identification) or opinion of different source (exclusion)".
109	4.2.2.2		E	Standard states that an examiner "shall" render an inconclusive opinion "when any of the following condition apply" then lists a set of non-exhaustive conditions. This list includes "d) damage; f) limited sample size". These terms are not defined and open to interpretation. Based on the above language from the standard "damage" could be interrupted to mean ANY damage, no matter how limited or extensive, should result in an inconclusive conclusion. The same applies to "limited sample size". What about a bullet fragment? How small is to small?  These are the questions that will be asked of an examiner when they ID an expended component that has limited damage or a single land impression. The examiner will be accused of making an error since, based on the standard as currently written and the legal counsel's interpterion of the standard, the conclusion should have been "inconclusive" since there was "damage" to the item and/or it was too small.	This "non-exhaustive list" should be removed and a format that reflects AFTE's Range of Conclusions, as it pertains to inconclusive, should be used, like that preposed in the OSAC document section 4.2.2-4.2.4. The range of conclusions should at least reflect the structure that has been used in the field.  At a minimum, if not removed or revised, terms such as "d) damage; f) limited sample size" should to be defined in a way to provide a context as to how they apply and relate to an inconclusive result.	Reject with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"

174	4.2.2.2		T	This section states that when ANY of the listed conditions exists, an examiner MUST conclude inconclusive. The opinion of inconclusive should not be dictated in all of the listed situations.	<p>An examiner <b>shall</b> conclude there is insufficient...</p> <p>a) an absence of random characteristics (<b>presence of class or subclass only</b>)</p> <p>b) lack of reproducibility of random characteristics,</p> <p>c) insufficient agreement, or insufficient disagreement, of random characteristics, or</p> <p>e) poor sample quality (though this is pretty unclear...what does poor mean? what if it's covered in drywall but I can clean it up?)</p> <p><b>An examiner may also consider the following (non-exhaustive) conditions when rendering an inconclusive opinion:</b></p> <p>d) damage,</p> <p>f) limited sample size,</p> <p>e) poor sample quality (maybe this condition is more appropriate here?)</p> <p>Of course re-do the lettering. I'm just using the current lettering to be clear where things are moving to.</p>	Reject with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"
185	4.2.2.2		E	There is inconsistency in this heading compared to 4.2.1.2, 4.2.3.2.	Change to "Criteria for Opinion of Inconclusive".	Accept
206	4.2.2.2		T	For samples with criteria (a), (d) or (e), they should not have proceeded to the comparative stage as the examiner would have rendered opinion that these are of no value (unsuitable) for source conclusion (cf 4.1.2).	Remove (a), (d), (e)	Reject: these criteria do not automatically mean there is no value for a source conclusion to be opined; the term "source conclusion" encompasses Same Source (identification), Different Source (Exclusion), and Inconclusive conclusions
265	4.2.2.2		T	The introduction sentence to the list is inaccurate. Strictly reading it it states that inconclusive should be the finding if any of the following conditions apply. This means that if say (a) holds (no random characteristics) but if there is class difference then since (a) holds that we can not eliminate on class, we need to report Inconclusive. The same for (d) damage. It's possible that part of the specimen is damaged but part is not; the undamaged part of the surface may be used to ID or Eliminate. I think that is not the intent here so the wording needs to change. I am not sure how to fix this as I'm not sure a list like this works for Inconclusive.	Recommend removing 4.2.2.2 as I don't see a way to make it work. I think that if 4.2.2.1 is cleaned up then we don't need 4.2.2.2.	Reject with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"
320	4.2.2.2		T&E	Delete "identification" and "elimination" and instead use "same source" and "different source" throughout the document.	replace "identification" with "an opinion of same source" and "elimination" with "an opinion of different source"	Accept with modification: "identification or elimination" was changed to "an opinion of same source (identification) or opinion of different source (exclusion)".
360	4.2.2.2		T	Removal of 3 variations of inconclusive	The removal of the three prongs of inconclusive, while having the appearance of being conservative, could potentially lead to ambiguity. The lack of being able to say if something is more likely or less likely to have come from a particular firearm could lead to a miscarriage of justice.	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source."
382	4.2.2.2		T	The examples given do not all definitively indicate that an elimination or identification can not be made - specifically, D, E, & F all MAY prevent an ID or ELIM but not always. All of the examples given play a factor in the whether a conclusion can be reached but do not prevent one under ANY circumstances (except B & C). Examples: A - Eliminations can still be reached based on a difference in class even without any random characteristics. F - only 2 cc's can still be ID'd together (which is a limited sample size)	change the wording from "An examiner shall" to "An examiner may" OR reword that section so it does not imply that if any of those conditions apply it must be called inconclusive	Accept with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"

389	4.2.2.2		T	No longer allows for conclusions of degrees of inconclusive (most likely different or same source) or how subclass fits into this conclusion. Even Dr. Dror lectures that inconclusives fall in a range.	Include subclass criteria or discuss how subclass falls into inconclusive when it cannot be eliminated, and allow for range of inconclusive - insufficient support for exclusion or identification similar to OSAC document	Accept with modification: the broad inconclusive category has been subdivided to include "insufficient support for opinion of different source," "insufficient support for either opinion of different source or opinion of same source," and "insufficient support for opinion of same source;" the "insufficient support for opinion of different source" category does include subclass consideration.
321	4.2.2.2 (c)		T	If a determination that there is insufficient agreement or disagreement is determined based on training and experience this should be noted. If there are objective standards for what constitutes insufficient agreement or disagreement those should be cited.	Either cite to a standard defining "insufficient" agreement and "insufficient" disagreement or add a note to this section that the determination of "insufficient" agreement and "insufficient" disagreement are "subjective" and that "objective standards for this determination do not yet exist."	Reject: it is inherently understood that firearm and toolmark examination has subjective components to it and therefore does not need to be specifically noted in this section of the standard.
97	4.2.2.2 a			Replace "random" with "individual" in line three, for the reasons outlined above in my comments for section 3.4 and 4.1.3.		Accept
98	4.2.2.2 b			Replace "random" with "individual" in line three, for the reasons outlined above in my comments for section 3.4 and 4.1.3.		Accept
186	4.2.2.2 d)		T	This section states, "shall conclude [inconclusive]" ... for damage. I strongly think this needs some qualifier for excessive damage or damage severely affecting visibility of toolmarks.	Perhaps "e) poor sample quality (ex: heavily damaged toolmark);"	Reject with modification: the sentence was edited to say "An examiner shall consider the following (non-exhaustive) conditions which may contribute to an inconclusive opinion:"
220	4.2.2.2, 4.2.3.2 (first bullet point)		T	The use of random, "reproducibility of random", "insufficient agreement, or insufficient disagreement, of random", "consistently reproduce random" all sounds contradictory or incongruous.	Change the word random to something more appropriate.	Accept with modification: the term random characteristic has been returned to individual characteristic
239	4.2.2.2, 4.2.3.2 (first bullet point)		T	the use of random, "reproducibility of random", "insufficient agreement, or insufficient disagreement, of random", "consistently reproduce random" all sounds contradictory or incongruous	change the word random to something more appropriate	Accept with modification: the term random characteristic has been returned to individual characteristic
42	4.2.3		E	Even forensic scientists who have attacked the major critics of firearms examination believe that the term "identification" is scientifically ludicrous and intrinsically tied up with absolute certainty. See ); I.W. Evett et al. , "Finding the way forward for forensic science in the US- A commentary on the PCAST report," 278 Forensic Sci. Int'l 16 (2017). And the approach of the field should not be to keep trying to keep that term while changing its meaning, especially where lay people are likely to interpret it as meaning absolute source attribution. Even if no other changes are made to this standard that term should be removed to get away from its long and troubled history. See e.g., Simon A. Cole, "Individualization is dead, long live individualization! Reforms of reporting practices for fingerprint analysis in the United States," 13 Law, Prob., & Risk 117, 144 (2014); H.J. Swofford & J.G. Cino, "Lay Understanding of "Identification," 68 J. Forensic Identification 29 (2018) (study concluding that "71% of potential jurors may be expected to interpret expert testimony containing the word 'identification'...to imply a single source attribution 'to the exclusion of all others'")	Remove "identification" and (if not adopting previous comments and proposed resolutions) simply keep "opinion of same source."	Reject: This standard includes "identification" in the parentheses of these headers as a bridge from the original terminology used by firearm and toolmark examiners to the terminology of "opinion of same source" that this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically.

47	4.2.3		E	Use of the term "identification" by pattern matching disciplines has been widely criticized, and should be eliminated from this document. Having it in a parenthetical undermines efforts to put an end to the use of this problematic language	Delete the parenthetical "identification"	Reject: This standard includes "identification" in the parentheses of these headers as a bridge from the original terminology used by firearm and toolmark examiners to the terminology of "opinion of same source" that this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically.
322	4.2.3		T	Identification should be deleted and should be added to the list of prohibited statements in 5.2.1. "Identification" has an extensive history of being used to state an absolute identification and is understood as an absolute identification in popular culture as a result of that history. Same source or common source combined with the definition provided temper that history.	Delete identification	Reject: This standard includes "identification" in the parentheses of these headers as a bridge from the original terminology used by firearm and toolmark examiners to the terminology of "opinion of same source" that this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically.
7	"4.2.3.1"		T	It is asserted here that "an opinion of same source is justified when ... very strong support". I don't know of any scientific argument that justifies the conclusion of "same source" based on an assertion of "very strong support", except in (Bayesian) decision theory (under certain conditions), but this is not what is assumed here. In order for a conclusion of "same source" to hold, all alternative sources must be excluded. But this latter assertion is precisely what is barred in this Standard under 5.2.1 bullet point 3.	Do not use "same source (identification)" language. When there is "strong support", then report "strong support" only, because that is what the scientist's findings amount to. Reporting "same source (identification)" would be an overstatement and go against "scientific rigor" highlighted in the foreword of the Standard.	Reject with modification: The terminology was changed to "high level of support" and "low level or no support"; the conclusion is clearly identified as an opinion of same source; the standard includes "identification" in the parentheses as a bridge from the original terminology used by firearm and toolmark examiners to the terminology this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically.
10	4.2.3.1		T	The requirement is to inappropriately round up the probative value of the evidence. The examiner knows only that the evidence strongly supports the same source hypothesis, but the examiner is required to report to the fact-finder that the two impressions DO originate from the same source. This rounding up effect is made even worse by the use of the word "identification," which is commonly understood by laypeople and practitioners to mean a conclusion of certainty, as an alternate label for this opinion. The problem is not cured by 5.2.1.bullet 3 or 5.2.5 because there is no difference between asserting that two toolmarks originated from the same source and asserting that two toolmarks originated from the same source to the exclusion of all other sources or with absolute or 100% certainty.	Report to the fact-finder that " the observed characteristics of the items in question provide very strong support that they were marked by the same tool and very weak or no support that they were marked by different tools" and delete the alternate label "identification."	Reject with modification: The terminology was changed to "high level of support" and "low level or no support"; the conclusion is clearly identified as an opinion of same source which is different than stating it originated from the same source to the exclusion of all other sources; the standard includes "identification" in the parentheses as a bridge from the original terminology used by firearm and toolmark examiners to the terminology this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically.
37	4.2.3.1		T	Terminology such as "very strong support" and "very weak support" imply statistically-derived comparisons, which will be incorrect until such time there are relevant distributions available.	Remove these terms.	Accept with modification: The terminology was changed to "high level of support" and "low level or no support"
99	4.2.3.1			Utilization of the term "very strong support" and "very weak support" once again implies a statistical approach or support for the conclusion to which we cannot support and is prohibited by section 5.2.3 of this document. Additionally referencing both of these terms in our conclusions insinuates that there is some degree of uncertainty in our opinion. If I author an opinion, I am certain in that opinion. If I am not then I will not author that conclusion and move to one of the levels of inconclusive.		Accept with modification: The terminology was changed to "high level of support" and "low level or no support"

138	4.2.3.1		T	<p>This document has omitted the portion of conclusion definitions that states "for the proposition". I believe that it has clearly been shown by statisticians creating research and standards in our field that we must show support, or lack thereof, for the two competing propositions.</p> <p>I very much like the inclusion of the two competing propositions. It demonstrates that we do not simply aim to identify items, but that we take into consideration all information and then weight the support at the end of the examinations.</p>	<p>Re-insert "for the proposition" so that it reads "...provide very strong support <b>for the proposition</b> that they were marked..."</p>	<p>Reject: The language of likelihood ratios does not accurately/fairly represent the current state of examinations. In the opinion of the working group too little is currently known about the use of subjective likelihood ratio approach (juror comprehension, feasibility of training practitioners, etc...) to warrant a change from categorical conclusions. Revisions for such terminology may be more appropriate in the future.</p>
165	4.2.3.1		T/E	<p>The section states, "An opinion of same source is justified when the observed characteristics of the items in question provide very strong support that they were marked by the same tool and very weak or no support that they were marked by different tools." This statement is overly broad, vague, and is not tied to scientific literature. Additionally, there is no guidance on how an examiner may state a same source conclusion given the lack of scientific evidence. Is the conclusion phrased as "could have come from the same source" or "come from the same source"? These statements differ by an expression of uncertainty. Simply stating the conclusion as an "opinion" does not absolve the examiner of the need to tie conclusions to scientific evidence and expressions of uncertainty.</p>	<p>This section should not be included in the standard based on insufficient scientific support and lack of sufficient safeguards for drawing same source conclusions.</p>	<p>Reject: This standard includes "identification" in the parentheses of these headers as a bridge from the original terminology used by firearm and toolmark examiners to the terminology of "opinion of same source" that this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically. The error rate studies provide scientific support for examiners providing their expert opinion of same source.</p>
266	4.2.3.1		T	<p>Why was "extremely" changed to "very"? This seems to be a small change, but I don't understand the reasoning.</p>		<p>Accept with modification: The terminology was changed to "high level of support" and "low level or no support"</p>
383	4.2.3.1		T	<p>There should be no support that the toolmarks came from difference tools if an ID is made. If there is any support that the items came from different tools than an ID should not be made. If this becomes the standard and I have to testify that per the standard my ID may have some actual support present that they came from different tools that I basically ignored, then my conclusion is worthless. Or more likely these "standards" are going to be ignored by examiners cause they dont actually represent the discipline.</p>	<p>Remove the "very weak" support and leave it as no support. This does not imply that it is not theoretically possible they came from a different tool, but it removes the idea that an ID can have support present that actually indicates another tool was used. The OSAC document does a much better job of defining an ID but explaining its limitations.</p>	<p>Reject with modification: The terminology was changed to "high level of support" and "low level or no support"; there can be documented similarities even when two items are known to come from different sources; thus the need to include "low level" of support when weighing the decision for an opinion of same source.</p>



29	4.2.3.2	T	<p>An identification is warranted when "the identified toolmarks fall within the range of variability of marks produced by the same tool" and "are inconsistent with the amount of disagreement demonstrated by toolmarks known to have been produced by different tools".</p> <p>Not only is this awkwardly worded and difficult to understand, but the plain meaning of this wording is completely different from the generally accepted criteria for identification. Marks produced by the same tool can vary widely in some situations. This new wording does not have a threshold (e.g. exceeds the best agreement demonstrated between toolmarks known to have been produced by different tools)</p> <p>Regarding "are inconsistent with the amount of disagreement demonstrated by toolmarks known to have been produced by different tools", this appears to be a double negative. Then does it translate to "are consistent with the amount of agreement demonstrated by toolmarks known to have been produced by different tools"?</p>	Use language more consistent with the generally accepted terminology. For example: "the extent of agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST) and is consistent with the agreement demonstrated by toolmarks known to have been made by the same tool (KSST)".	Accept with modification: the wording was adjusted to read "the identified toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
30	4.2.3.2	T	The second paragraph discusses task-relevant information. I do not see how this is important information when reaching a conclusion of identification. If the criteria for identification has been met, it has been met. If it has not been met then a conclusion of identification is not justified.	Remove references to task-relevant information from 4.2.3.2.	Reject: While task-relevant information might seem more important for other conclusions, it is still information that may need to be considered prior to making a same source conclusion.
61	4.2.3.2	T	KSST and KDST should be changed to KM and KNM if those terms are changed. The statement "ability of the tool to consistently reproduce random characteristics;" should be corrected or clarified. The way it reads, it sounds like every time a tool is used, the marks it produces are random and different, which is not the case. Clarify that the tool has random characteristics imparted on it, which when marked, reproduce consistently.	Terminology of KM and KNM is preferred. The statement "ability of the tool to consistently reproduce random characteristics;" should be changed to something like "ability of the random characteristics on the tool surface to be reproduced." Alternatively, if the word "random characteristics" is too confusing, change back to "individual characteristics."	Reject: The change to the terminology from known match and known non-match to known same source and known different source provides more descriptive and precise terms for those categories. It avoids unintended connotations associated with the term match.  Accept: the term random characteristic has been returned to individual characteristic
83	4.2.3.2	E	I find this section confusing, particularly this part: "only if there are demonstrable similarities in random characteristics such that the identified toolmarks fall within the range of variability of marks produced by the same tool (KSST) and are inconsistent with the amount of disagreement demonstrated by toolmarks known to have been produced by different tools (KDST)". The phrase "range of variability", in particular, is confusing especially when talking about an identification where agreement of markings is needed.	I suggest changing this to "An opinion of same source is based on an examiner's determination that all discernible Level 1 and Level 3 characteristics agree such that the extent of agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST) and is consistent with the agreement demonstrated by toolmarks known to have been made by the same tool (KSST)."	Accept with modification: The section now reads as follows: "If the discernable class and subclass characteristics are compatible, an examiner shall render an opinion that toolmarks originated from the same source only if there are demonstrable similarities in random characteristics such that the toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
100	4.2.3.2		Replace "random" with "individual" in line three, for the reasons outlined above in my comments for section 3.4 and 4.1.3.		Accept
139	4.2.3.2	T	The same comment applies here as through the who document on the use of class, subclass and individual/random	Replace with level 1-Level 3 characteristics	Reject: The consensus body does not believe the latent print terminology is appropriate for the firearms and toolmarks discipline.

140	4.2.3.2		T	"such that the identified toolmarks"... are we not putting the cart in front of the horse here. We are using "identified toolmarks" in the criteria needed to identify toolmarks. The way it reads, the examiner has already identified the toolmarks and then checks to see if the meet the criteria for ID. Rewording is needed.	Replace "identified" with compared	Accept with modification: the word "identified" was removed from the sentence.
141	4.2.3.2		T	"and are inconsistent with the amount of disagreement demonstrated by toolmarks known to have been produced by different tools (KDST)" This double negative is very confusing and should be cleaned up in a standard.	If this wording is maintained , it should be stated that IDs are..."inconsistent with the amount of agreement demonstrated by toolmarks known to have been produced by different tools (KDST) by exceeding the agreemet demonstrated by toolmarks known to have been produced by different tools (KDST)"	Accept with modification: The section now reads as follows: "If the discernable class and subclass characteristics are compatible, an examiner shall render an opinion that toolmarks originated from the same source only if there are demonstrable similarities in random characteristics such that the toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
166	4.2.3.2		T/E	While there may be evidence for sorting toolmarks into classes of potential tools, the standard does not refer to any black box studies that demonstrate that examiners can validly and reliably match a toolmark to a source tool based on visual comparison. This section also does not contain an explicit prohibition against drawing same source conclusions in the absence of analysis with the suspect tool.	This section should not be included in the standard based on insufficient scientific support and lack of sufficient safeguards for drawing same source conclusions.	Reject: There is a large volume of research in the literature with the goal of assessing validity of the science of toolmark comparision. This document is not the appropriate location to provide such references.
175	4.2.3.2		T	This section only includes information about task relevant information should be considered <i>if a suspect tool is available</i> ... There is not a list of task relevant information to be considered if a suspect tool isn't available.	I think task-relevant information should always be considered. Whether there is a tool or not.  Drop the "if a suspect tool is available for examination" from the clause.	Accept with modification: "if a suspect tool is available for examination" was removed and the second bullet point was updated to read "condition of the tool working surface or substrate, if available"
207	4.2.3.2		E	Suggest the use of 'exclusionary difference' and 'agreement' instead. Insert comma before 'such'	If <b>there are no exclusionary differences</b> in class and subclass characteristics, an examiner shall render ... there are <b>demonstrable agreement</b> in random characteristics, such that ...  Task-relevant information should be considered ... if <b>agreement</b> observed in ...	Reject: the wording of the section using "compatible" and "similarities" is appropriate  Accept: inserted the comma as suggested
221	4.2.3.2		T	There are too many negative words (both inconsistent and disagreement).	The OSAC document did a more concise job of explaining the examiner's thought/examination process when rendering a same-source conclusion.	Reject with modification: The section now reads as follows: "If the discernable class and subclass characteristics are compatible, an examiner shall render an opinion that toolmarks originated from the same source only if there are demonstrable similarities in random characteristics such that the toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
222	4.2.3.2		T	"Fall within the range of variability of marks produced by the same tool (KSST)....." VCM studies have shown that sometimes these variabilities can overlap depending on the sample.	If the purpose of this statement was to convey the theory of identification, then the AFTE theory should have been expounded upon to describe the amount, quantity, and/or other adjective needed to make the proposition of a KDST unlikely.	Reject with modification: The section now reads as follows: "If the discernable class and subclass characteristics are compatible, an examiner shall render an opinion that toolmarks originated from the same source only if there are demonstrable similarities in random characteristics such that the toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
227	4.2.3.2		E	"Relative dates of collection of all evidence" - evidence can be recovered after a firearm (e.g. cartrdige cases removed from a scene and placed in a plastic bag, falling into a street drain, etc.), so although collection dates can be beneficial, the analysis should also not rest of this information and has the abilty to create bias while working the case.	Remove or provide additional disclaimer and context about scenarios that may be impacted by collection date.	Reject: The introductory sentence for this bullet point states "Task-relevant information should be considered"; it does not state it shall always be considered.

240	4.2.3.2		T	task relevant information	task relevant information may have been used prior to examination of two items on the microscope, but once you are giving an opinion of same-source the only information you consider is the amount of agreement of "individual/accidental/etc" marks on the items	Reject: While task-relevant information might seem more important for other conclusions, it is still information that may need to be considered prior to making a same source conclusion.
241	4.2.3.2		T	"inconsistent with the amount of disagreement demonstrated by"; the human brain is trained to see agreement, it's only when the examiner cannot find sufficient agreement with the two samples that the proposition of a non-matching hypothesis become the more likely scenario. Also, there seems to be too many negative words (both inconsistent and disagreement). This paragraph is poorly phrased.	The OSAC document did a better job of explaining the examiner's thought/examination process when rendering a same-source conclusion	Reject with modification: The section now reads as follows: "If the discernable class and subclass characteristics are compatible, an examiner shall render an opinion that toolmarks originated from the same source only if there are demonstrable similarities in random characteristics such that the toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
242	4.2.3.2		T	"fall within the range of variability of marks produced by the same tool (KSST)....." From VCM studies we know that sometimes these variabilities can overlap depending on the sample. this makes this statement more confusing that the AFTE Theory	If the purpose of this statement was to convey the theory of identification, then the AFTE theory should have been expounded upon to describe the amount, quantity, and/or other adjective needed to make the proposition of a KDST unlikely	Reject: the purpose of this statement is not to convey the AFTE theory of identification; it is meant to describe the point in which an examiner shall reach the opinion of same source conclusion. The examiner relies on their training on comparisons of toolmarks made by the same tool and toolmarks made by different tools.
284	4.2.3.2		T	What does "demonstrable" mean? I do know what the word means, however it does not make sense in regard to this conclusion	I do not understand the wordplay with some words that made sense to both experts and lay people alike. I see nothing wrong with the word "significant" especially when paired with the word "duplication". But if that word has to be discarded, why not use the word "considerable" or "substantial". I believe a lawyer or jury may understand those two words moreso than "demonstrable".	Reject: the word "demonstrable" is not meant to convey the amount of agreement, but that the agreement can be documented.
285	4.2.3.2		T	The task relevant information here is a very dangerous road. If I'm playing Devil's Advocate, I would ask since you cannot check the ability of the tool to consistently reproduce random characteristics, you cannot determine that two cartridge cases from a scene were fired in the same firearm because you do not have the tool. Also, how many times must a mark be consistently reproduced to meet this criteria? Also, by not having the tool and understanding the condition of the working surface, is comparisons negated in no tool case.	<b>This needs to be removed.</b> It may be a part of an examiners SOP to perform these tasks. But if it is memorialized here, then any defense attorney can use this information to go after an examiner who has made an association in a no tool case. (e.g. cartridge case found at scene and cartridge case found in suspect's vehicle). They can state that since you cannot evaluate the ability of the tool to consistently reproduce random characteristics nor could you evaluate the condition of the tool working surface, then you have no basis for conducting a comparison without having the tool	Reject: this section is a recommendation (should) and gives three examples of potential task-relevant information; a tool is not always necessary for evaluating the reproducibility of characteristics; the condition of the working surface would be task-relevant if there is a possibility it has changed since the questioned toolmarks were created (like the steel cutting surface of bolt cutters rusting).
296	4.2.3.2		T	The first bullet point could be misinterpreted as a tool consistently making random characteristics each time it is used rather than reproducing its own random characteristics	Reword "ability of the tool to consistently reproduce its random characteristics"	Accept with modification: the bullet point was re-worded to read "ability of the random characteristics on the tool surface to be reproduced".
298	4.2.3.2			remove 'and subclass characteristics'	delete phrase	Reject: subclass characteristics need to be considered and, when found, need to be in agreement in order to potentially render an opinion of same source.
299	4.2.3.2			substitute 'are compatible'	replace with 'in agreement'	Reject: "are compatible" is appropriate wording for this sentence.
300	4.2.3.2			change 'demonstrable similarities'	replace with 'observable agreement'	Reject: "demonstrable similarities" is describing the ability to document and demonstrate the pattern within the random characteristics.
301	4.2.3.2			add word to 'random characteristics'	add 'accidental' to 'random characteristics'	Reject: adding the word "accidental" would change the meaning of "random characteristics".

340	4.2.3.2		T	"Opinion of same source" and the word "identification" in the same title. Which terminology does the document recommend?		Reject: This standard includes "identification" in the parentheses of these headers as a bridge from the original terminology used by firearm and toolmark examiners to the terminology of "opinion of same source" that this standard is moving the discipline to; it also ties the terminology together for the ability to examine past error rate studies that use the term "identification" specifically. The error rate studies provide scientific support for examiners providing their expert opinion of same source.
341	4.2.3.2		T	There needs to be a mention somewhere in the document that extensive training on KSST and KDST needs to part of a toolmark examiners training, to include a wide range of tools.		Reject: training is outside the scope of this document.
356	4.2.3.2		T	"If discernible class and subclass characteristics are compatible...". Agreement of subclass characteristics should be more clearly defined.	Change statement to read "If discernible class characteristics are compatible (or "in agreement") and any agreement of subclass characteristics have been accounted for , an examiner shall render..."	Reject: if subclass is not compatible, you could not render an opinion of same source; therefore, for this particular section, class and subclass characteristics both need to be compatible.
371	4.2.3.2		technical	The Criteria states in part ..."toolmarks fall within the range of variability of marks produced by the same tool (KSST)". This goes away from the current guidance on when an "ID" is appropriate, which states that "...is consistent with agreement demonstrated by toolmarks know to have been produced by the same tool." The ASB document states "falls within the range of variability". Well, KSST (or KM) are known to vary greatly, and some KM can have very little agreement and thus fall within a KNM distribution. The guidance provided here is confused and not helpful.	Describe what is intended (but also not well described) by the AFTE "Theory" of ID: The degree/amount/clarity/quantity of agreement observed is such that the chance of it occurring in an KDST is unlikely.	Reject with modification: "and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)" was added to the sentence and expresses a higher threshold for agreement.
372	4.2.3.2		technical	The criteria states in part ..."are inconsistent with the amount of disagreement demonstrated by toolmarks known to have been produced by different tools". The use of inconsistent AND disagreement seems to be a double negative and says the opposite of what is intended. This could be read to mean that an examiner should look for marks that are consistent with the amount of agreement demonstrated by same tools (for that would be "inconsistent with the amount of disagreement"). The wording here is very confusing and needs a total rework.	The key for examiners to provide opinions of same source is that the chance of a non-match is very unlikely while the chance of a match is also likely. The greater the difference between the two, the stronger the support for one proposition vs the other. This ratio exists when the amount of agreement of "individual" marks that is no longer (reasonably) explained by a non-matching hypothesis. The OSAC document submitted does a better job of explaining this, as does the ASB fingerprint document	Reject with modification: The section now reads as follows: "If the discernible class and subclass characteristics are compatible, an examiner shall render an opinion that toolmarks originated from the same source only if there are demonstrable similarities in random characteristics such that the toolmarks fall within the range of variability of marks produced by the same tool (KSST) and the agreement exceeds that which has been demonstrated by toolmarks made by different tools (KDST)."
374	4.2.3.2		technical	The criteria for same-source lists task relevant information.	The information does not seem relevant to the task of providing an opinion of same-source. This information may provide important context for deciding between Inc and different source, however it seems the only information relevant for an opinion of same-source is the amount of agreement of 'individual' markings on the two compared specimens.	Reject: While task-relevant information might seem more important for other conclusions, it is still information that may need to be considered prior to making a same source conclusion.
187	4.2.3.2		T	Subclass isn't present all the time.	"...discernable class and subclass characteristics (if present) are compatible..."	Reject: this is covered by the use of the word "discernable" in describing both class and subclass characteristics in this sentence.

3	4.2.3.2 and 4.2.1.2.2		T	This document does not sufficiently address the importance of examining bore casts for rifling methods that lend themselves to subclass carryover in rendering same source/different source conclusions and the consideration that needs to be given cases with fired bullets and no firearm submitted for comparison. The document addresses task-relevant information in detail, but mentions subclass characteristics in only two sections within the body of the document (4.2.3.2 and 4.2.1.2.2).	In 4.2.3.2., add the examination of a bore cast when comparing fired bullets. Also add a section to 4.2.3.2 with subclass considerations when making same source conclusions without a submitted firearm, particularly for cases with fired bullets.	Reject: This document is on conclusions, not examinations; therefore, this is outside the scope of this document.
116	4.2.3.2 Criteria for Opinion of Same Source (Identification)		T	As above at #1 (Does the discipline want to move away from the Known Non-Match (KNM)/KDST concept, as most examiners cannot remember their actual best KNM or do not physically refer to it during microscopic examinations?)	As above at #1 (Remove this KDST concept, with no alternate information required.)	Reject: The basis of a firearm/toolmark examiner's training is examination of known same source and known different source toolmarks. It would be inappropriate to remove the known different source toolmark concept from this document. The term "best KNM" is not in this document but it originates in the AFTE theory of identification.
118	4.2.3.2 Opinion of Same Source (Identification) - General		T	As above at #4	As above at #4	<b>Note: this comment is referring to comment #117</b> Reject: The level of requested detail is outside the scope of this document.  Reject: This is covered within the first two bullet points.
142	5		T	This section is not necessary in this particular standard on range of source conclusions. The scope of the document does not allow for this section. I believe that the content in section 5 is important and should be included in a separate standard document ex. "Standards Language in Testimony and Reports". It does not belong on the Range of Conclusions just as standards for documentation best practices do not belong here. In the event that section 5 is maintained, I will provide comments to the subsections of section 5 below.	remove section 5 completely from the document	Reject: the working group determined there is value in retaining section 5 in this document at this time.
323	5		T	This section is missing critical qualifications and limitations (qualifications and limitations that exists for any method, whether they have been measured or not). The standard needs to address error rates and how these should be reported. It needs to address the repeatability and reproducibility of conclusions using this scale within the field. These are significant issues but the prohibitions below (which need to be stated) beg the question of what is an examiner to say if they cannot say the error rate is zero. What is the examiner supposed to say about the error rate? Likewise if they cannot say it is the same source to the exclusion of all other sources what are they supposed to say about how many other sources might share the same features?	add "prohibition" to the title; add language to address what the examiner should report about how many other sources might share the same features, and how this determination about uncertainty was made; and add language to address what the examiner should report about error rates.	Reject: this is outside the scope of this document.
38	5.1		T	This is attempting to dictate lab-level policy from a discipline level and the topic doesn't fall exclusively within the purview of source determinations, it should be addressed elsewhere.	remove	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."

75	5.1			<p>“5.1”</p> <p>Recommend reducing to a single useful advisory statement relating to the issue of bias. This section unnecessarily over emphasizes the issue without any justification that such bias affects casework in practice to a similar proportion to that emphasis. Also, specifically, 5.1.1 specifies that the laboratory “shall” provide “training” and a “procedure” on the topic—current accreditation quality assurance language is much less specific and typically takes the form “the laboratory shall ensure” which gives a wider latitude for mechanisms to achieve the same goal.</p>		<p>Accept: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
101	5.1			<p>A general recommendation to be aware of bias is all that is necessary. Attempting to break down which specific information/materials may cause bias is unnecessary and unsupported that these specific few points are the most important. Narrowing language to be as specific as that in 5.1.1 “shall include training on potential sources of bias . . .” limits to only those specific sources. Broadening the language to general training on bias and have an overall procedure to implement this training is more appropriate.</p>		<p>Accept: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
112	5.1		E	<p>Training addressing bias, sources of potential bias, etc. is a training issue not a range of conclusions issue. This should be addressed in training, not in this document.</p>	<p>Remove section 5.1</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
219	5.1		T	<p>This section seems inappropriate for a criteria document case, especially considering some of the examples of bias provides.</p>	<p>Remove entire section or simply note that sources of bias should be considered.</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
238	5.1		T	<p>This section is inappropriate for a criteria document and should be placed in a document more suited for it such as a training document. There are a lot of factors that go into an entire case, the portion that this document provides a framework for is source conclusions and criteria for identification. Bias is something that is taught during training and is something that is considered in every case, not just those that have microscopic comparisons.</p>	<p>Remove entire section</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
267	5.1		T	<p>The scope of this standard is "a standard scale of conclusions and criteria to be used for all toolmark examinations and comparisons" it does not include report writing, testifying, or training. Therefore 5.1.1, 5.1.2, and 5.1.3 are beyond the approved scope of this document. These points on training and bias are better addressed in separate documents. Including them here simply opens the door to attacks against the rigorous part of this document.</p>	<p>Section 5.1.1, 5.1.2, and 5.1.3 should be removed.</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>

324	5.1		T	<p>These are all critical topics -- training on human factors, self evaluation and the potential for close non-matches in all case work and the increased potential when using database searches. None of these can be adequately addressed in a sentence, but the role of human factors must be acknowledged as a limitation. And these additional items could be noted as essential pieces of a quality assurance program that should be in place in any FSP using this scale. Though the development of and use of sequential processes with contemporaneous documentation should be added.</p>	<p>A possible rewrite might be as follows: 5.1 Human Factors, Effect on Opinions. A firearm and toolmarks examiner's opinion pursuant to this scale is ultimately subjective in nature. As a result human factors can play a role and this shall be acknowledge by examiners as a limitation. This section could go on to list steps that an FSP should take to minimize the role of human factors while acknowledging that human factors cannot be eliminated. For example 5.1.1 Laboratories shall include training on human factors for examiners by subject matter experts. 5.1.2 Laboratories shall develop SOP to minimize the effects of human factors that address task irrelevant information, sequential procedures, contemporaneous documentation at each stage. 5.1.3 Laboratories shall develop blind verification procedures to the extent possible. The drafters should consult with human factors experts to finalize this section.</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
354	5.1		T	<p>The pitfalls listed in 5.1.1 through 5.1.3 are items that belong in a section of a training manual, not in the conclusion scale document.</p>	<p>Delete section 5.1</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
53	5.1.1		T	<p>Include example of procedure to minimize the effects of bias</p>	<p>Example: Have conclusions checked by another examiner</p>	<p>Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>
268	5.1.1		T	<p>Training is beyond the scope of this document.</p>	<p>Section 5.1.1, 5.1.2, and 5.1.3 should be removed.</p>	<p>Accept with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."</p>

330	5.1.1		T	It is important to state that biases can be unconscious and can influence perceptions outside of awareness.	Change section 5.1.1 to read: "Biases are systematic errors in thinking that influence how people process and interpret information. Because biases operate unconsciously, people cannot accurately report whether their judgments and decisions are biased. The laboratory shall include awareness training on potential biases (e.g., confirmation bias) and the conditions that are likely to elicit those biases (e.g., database associations have the potential to elicit the confirmation bias by creating the expectation of a match, causing close non-matches to be perceived as an identification). In addition, the laboratory shall include procedures in place to minimize the effect of biases on forensic observations and conclusions, such as blind verifications. <sup>1</sup> Footnote 1: More information about cognitive biases in forensic science and bias mitigation countermeasures can be found in: Dror, I. E. (2020). Cognitive and human factors in expert decision making: Six fallacies and the eight sources of bias. Analytical Chemistry, 92(12), 7998–8004. <a href="https://doi.org/10.1021/acs.analchem.0c00704">https://doi.org/10.1021/acs.analchem.0c00704</a> "	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
376	5.1.1		technical	This is under qualificaitons and limitations section but speaks to what sort of training an examiner shall have. Bias/training belong in an entirely different document, such a training standard. The ASB friction ridge document does not address the training of examiners and bias issues. This (the firearms) document does not speak to the entire other suite/modules of training an examiner should undergo prior to performing and reporting toolmark source conclusions. One might think that if as long as an examiner has this sort of training, then they would be qualified to perform toolmark examiners. This feels shoe-horned/tacked on.	Remove 5.1.1	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
391	5.1.1		T	This relates to training not necessarily conclusions. I would consider this outside the scope of the docuent. But how is training tracked? Is this something to be documented in the notes? Why is this included?	Clarify in a comment or footnote or add to a considerations section or remove from document and put in supplement. This is not the purpose of this document.	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
62	5.1.2		T	Use of the term "non-matches" here is not consistent with new wording of "KDST" or "DST". If you are trying to get away from the term "match" in other places, then this should be revised.	Either keep this terminology, and the KM and KNM terminology, or use the KDST known different source toolmarks terminology, but try not to use both. "different source toolmarks with very similar appearance" instead of non-matches.	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
84	5.1.2		E	I suggest suggest removing this portion of the statement: "and have the capacity to produce close non-matches"	Including this infers that close non-matches are a cause of confirmation bias when I believe that this statement is related more to other factors like case information.	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
286	5.1.2		T	What is insinuated with the "close non-match" statement? Using the criteria in 4.2.2.2, non matches (or KDST) should not be close	At the very least change it to "...confirmation bias and have the capacity to influence conclusions"	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."



331	5.1.2		T	Unfortunately, awareness of the potential for cognitive bias will be wholly insufficient to prevent the bias from operating. The training mentioned in 5.1.1 should include training in the unconscious biases, such as contextual or confirmation bias, and how they might occur by database associations.	Delete 5.1.2	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
347	5.1.2		E	This seems to be a very specific type of bias to put in the "Effects on Conclusions". Combine 5.1.2 and 5.1.3.	The examiner should be aware of and evaluate their conclusion reasoning for contextual and confirmational biases.	Accept with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
377	5.1.2		technical	This is under qualificaitons and limitations section but speaks to what sort of training an examiner shall have. Bias/training belong in an entirely different document, such a training standard. The ASB friction ridge document does not address the training of examiners and bias issues. This (the firearms) document does not speak to the entire other suite/modules of training an examiner should undergo prior to performing and reporting toolmark source conclusions. One might think that if as long as an examiner has this sort of training, then they would be qualified to perform toolmark examiners. This feels shoe-horned/tacked on.	remove 5.1.2	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
188	5.1.2		T	In the rest of the document, it looks as if the term "match" is being avoided, but term "non-matches" is used here.	Replace "close non-matches" with "especially similar different-source toolmarks".	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
269	5.1.3		T	Contextual bias is an important concept and should be included in another document. Inclusion of potential contextual bias is beyond the scope of this document. When discussed it needs a detailed defintion, how it can be detected, and how it can be minimized.	Section 5.1.1, 5.1.2, and 5.1.3 should be removed.	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
378	5.1.3		technical	This is under qualificaitons and limitations section but speaks to what sort of training an examiner shall have. Bias/training belong in an entirely different document, such a training standard. The ASB friction ridge document does not address the training of examiners and bias issues. This (the firearms) document does not speak to the entire other suite/modules of training an examiner should undergo prior to performing and reporting toolmark source conclusions. One might think that if as long as an examiner has this sort of training, then they would be qualified to perform toolmark examiners. This feels shoe-horned/tacked on.	remove 5.1.3	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."

332	5.13		T	As discussed in Comment 2, biases can be unconscious. Therefore, it will not be possible for examiners to be aware of and evaluate their conclusion reasoning for biases. One safeguard is to report all information that was available to the examiner at the time that s/he performed the forensic analysis. At least that way somebody else could evaluate whether that prior information had the potential to bias the forensic conclusion. In addition, during the evaluation of the conclusions, it could be determined that the examiner was inferenced by a biasing contextual information (i.e., the bias already occurred). In this case, having detailed documentation can enhance transparency on how conclusions were reached.	This statement is vague and needs further details. Suggested amendment: "The examiner should document all information used during their decision making. This way, potential effects of biases (such as task-irrelevant, contextual information) on conclusions can be evaluated and transparency of decision making can be enhanced."	Reject with modification: section 5.1 was edited to provide a more broad requirement involving the potential of bias to effect conclusion decision making and now states "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making conclusions."
107	3	5.2	E	A large portion of this section 5.2 appears to have been "cut and paste" from the DOJ Uniform Language document. However, there is a key portion of this document that appears to have been overlooked and not included in this standard, especially in light of changing keywords that have been used in the field in reports and court testimony for decades. If new terms are used to replace currently used terms, which I believe is a mistake, then there needs to be some statement to the effect that the replacement of this terms does not mean that those previously used are erroneous, incorrect, or indefensible. By changing words, those previously used in testimony will be challenged during appeals, etc.	Paragraph number 3, on page 1 under Section II. of the DOJ document reads as follows: <i>"This document should not be construed to imply that terminology, definitions, or testimony provided by Department examiners prior to its effective date that may differ from that set forth below was erroneous, incorrect, or indefensible. It should also not be construed to imply that the use of different terminology or definitions by non-Departmental forensic laboratories or individuals is erroneous, incorrect, or indefensible."</i>  If we are going to start changing terminology there has to be something to protect those terms that have been previously used , especially those used in court testimony.	Reject: The terms "Exclusion" and "Identification" remain in the title for the sections 4.2.1, 4.2.1.2, 4.2.3, and 4.2.3.2 as a bridge (or crosswalk) of new terminology to that represented in the current AFTE Theory of Identification and previously published validation studies. Nothing in the 5.2 section is a new change to terminology.
4	5.2		T	Section 5.2 states what an examiner should not do when expressing conclusions, but does not state how an examiner should express conclusions.	Add verbiage that addresses how an examiner should express same source/different source conclusions.	Reject: Section 5 was re-written to remove expression requirements.
102	5.2			A direct quote and incorporation for the DOJ ULTR is un-necessary in this document. A reference to it would be acceptable, but forced acceptance of their language I cannot agree with.		Accept: DOJ ULTR was moved to solely be a reference on the document.
270	5.2		T	The scope of this standard is "a standard scale of conclusions and criteria to be used for all toolmark examinations and comparisons" it does not include report writing, testifying, or training. Therefore 5.2.1, 5.2.2, 5.2.3, 5.2.4, and 5.2.5 are beyond the approved scope of this document. These points are better addressed in a separate document on testimony and report writing.	Sections 5.2.1, 5.2.2, 5.2.3, 5.2.4, and 5.2.5 should be removed.	Accept with modification: Section 5 was re-written to remove expression requirements.
287	5.2		E	Dead link	Fix Link	Reject: The link works and is accessible.
290	5.2		E	This is a cut and paste of the procedure of one jurisdiction. Binding the entire discipline, all city, county, state, and international courts with the verbiage of one jurisdiction is biased to say the least. While, there are some statements i agree with, the entire cut and paste is not accurate. Using a document not crafted by firearm examiners nor vetted is irresponsible in my opinion.		Accept: DOJ ULTR was moved to solely be a reference on the document.
325	5.2		T&E	This is really a list of prohibitions and should be identified as such and should perhaps be a separate section distinct from Qualifications and Limitations.	Prohibitions When Expressing Limitations	Reject: Section 5 was re-written to remove expression requirements.

326	5.2		T	"Match" and "identification" should be added to the list of terms that should not be used when describing a source opinion. "Match" and "identification" are too closely tied to history of providing absolute identifications. Describing a random characteristic or set of random characteristics as unique or individual should also be prohibited again to avoid making an absolute statement of identification inconsistent with the definition "strong support for same source".	Add "Match" and "identification" to the list of terms that should not be used when describing a source opinion. Include a statement that when describing a random characteristic or set of random characteristics the examiner shall not use the term unique or individual.	Reject: Section 5 was re-written to remove expression requirements.
8	"5.2.1"		T	The attempt to distinguish "same source (identification)" from "individualization" has been referred to as "rhetorical chicanery" (see e.g. comments by Mr. Joe Cecil in the Advisory Committee on Evidence Rules, p. 459 in the Committee on Rules of Practice & Procedure, June 25, 2019). Moreover, it is unclear how the examiner could assert, logically, "same source" without "exclusion of all other sources" (on this point, see also Judge Campbell's comments in the Committee on Rules of Practice & Procedure, June 25, 2019. p. 459).	Remove "same source (identification)" and "source conclusion" language from the Standard, to avoid contradiction with "shall not (...) assert that two toolmarks originated from the same source to the exclusion of all other sources" (5.2.1, bullet point 3). Note that the latter clause essentially amounts to admitting that the expert cannot render "same source (identification)" conclusions; they are intrinsically impossible.	Reject: The existing language is consistent with the AFTE Theory of Identification as well as current and accepted practice.
11	5.2.1		T	The use of the term "decision" is inappropriate here since it may be understood to refer to decision theory, which would hold that fact-finders, not toolmark examiners, should make decisions.	Change "decision" to "opinion"	Reject: Section 5 was re-written and no longer contains the word "decision".
48	5.2.1		E	"Identification" and "unique" both imply one singular source (to the implied exclusion of all others), and should not be used	Add "identification" and "unique" to this section's list of prohibited terms	Accept with modification: Section 5 was re-written to remove expression requirements; however, "unique" is included as a term to be cautious with.
49	5.2.1		E	Good that "to the exclusion of all others" is barred, but this standard needs to provide guidance about what an examiner can say about the number of tools that may produce similar features.	Add something along the lines of the following (consistent with AAAS Latent Print Quality and Gap Analysis report recommendations): The examiner shall explain that there is no way to determine how many other tools may produce corresponding features (i.e. random characteristics), but in their opinion this set of features (random characteristics) is unusual.	Reject: Section 5 was re-written to remove expression requirements.
63	5.2.1		T	If we can no longer use the term "uniqueness" then suggest an alternative for what we are allowed to say. Are random characteristics unique or not? The word "random" sounds more "unique" than the term unique does. I do not see anything wrong with using the term unique here if the concept of randomness supports that. I also have issue with using the term "shall not." Many people in the discipline currently define individual characteristics as unique to the tool that produced them, and attorneys like the word as well. Is "random" not a statistical term as well?	change "shall not" to "should not". Maybe suggest what statement a source identification or source conclusion should be based on instead, such as, "sufficient agreement of individual/random characteristics." I also suggest not banning the word "uniqueness."	Reject: Section 5 was re-written to remove expression requirements.
68	5.2.1		T	A source exclusion IS based on the uniqueness of an item of evidence. For example, if there is an obvious mismatch of caliber or other class characteristics. Something that is physically impossible.	Remove "source exclusion" clause.	Reject: Section 5 was re-written to remove expression requirements.
69	5.2.1		T	"Assert that a 'source identification' or a 'source exclusion' conclusion is based on the 'uniqueness' of an item of evidence." If not uniqueness cannot be used, how would an examiner assert a source conclusion? The science hinges on the fact that toolmarks are unique to that firearm. Even with a random characteristics definition would imply that it's unique to the tool and imparted toolmark.	I suggest removing this requirement since the other clauses below it will cover the idea that "uniqueness" does not mean 100% certainty or that it's infallible.	Reject: Section 5 was re-written to remove expression requirements.

76	5.2.1			<p>"5.2.1"</p> <p>Outright bans of terms such as "uniqueness" and "individualize" do a disservice to an expert's role in attempting to communicate information in the context of a court of law. These terms can be misused, but removing them from the lexicon is improper. Uniqueness can be suitably described as a necessary pre-condition for identification to be possible and like any other scientific principle remains valid until falsified. Note, even a contemporary government document critical of the practice of tool mark examination (PCAST 2016) acknowledged the validity of "uniqueness" in that context:</p> <p>"Yet, uniqueness studies miss the fundamental point. The issue is not whether objects or features differ; they surely do if one looks at a fine enough level. The issue is how well and under what circumstances examiners applying a given metrological method can reliably detect relevant differences in features to reliably identify whether they share a common source."</p>		Reject: Section 5 was re-written to remove expression requirements.
103	5.2.1			<p>Banning terms such as "uniqueness" and "individualization" from the lexicon available to firearm and toolmark examiners is unacceptable. The expert's role is to analyze the evidence based on sound science and the principles within and then to report their opinions based on that analysis. Removal of such terms will hinder the examiners' ability to communicate their conclusions clearly to their customers. Can these term's be miss-used, absolutely, however their use is still valid based on the principles of the basic scientific rigor in that once a theory is established the scientific principles based on that theory remain valid until falsified. Our theories and principles are constantly being tested, both within and outside of our discipline, and have yet to be falsified.</p>		Reject: Section 5 was re-written to remove expression requirements.
110	5.2.1		E	<p>Language "examiners decision". The conclusions provided during testimony or in a report is more appropriately termed as an "examiners opinion".</p> <p>This language is important since, during admissibility challenges, the issue is can the expert testify to their opinion. The Daubert standard (Rule 702) refers to a qualified expert's <b>opinion</b>, not their decision. Also, the term <b>opinion</b> is also used through this document in other areas and should be used here as well.</p>	Change the wording from decision to opinion, because that is what an examiner is testifying to and it mirrors the language used in Rule 702.	Reject: Section 5 was re-written and no longer contains the word "decision".
143	5.2.1		T	<p>This statement does not allow for the ability of examiners to provide statistically-derived or verified measurements once these capabilities become used in casework. These standards documents take years to complete and revise; therefore, they need to be nimble enough to accomodate upcoming developments in technology.</p>	A conclusion provided during testimony or in a report is ultimately an examiner's decision. Unless based on a statistically-derived or verified measurement process, an examiner shall not:	Reject: Section 5 was re-written to remove expression requirements.
148	5.2.1		T	<p>Quote from SWGGUN ARK "The basis for identification in Toolmark Identification is founded on the principle of uniqueness as described by Kirk through Tuthill; wherein, all objects are unique to themselves and thus can be differentiated from one another".</p>	Rewrite to insure the foundation of our science is protected. We have used and explained the words unique and uniqueness to decrbe the ability to differeniante between items for over 100 years. Toolmarks produced by different tools are unique. The theory has not been disproven . . . if it ever is . . . we can revisit.	Reject: Section 5 was re-written to remove expression requirements.

149	5.2.1		T	Individual and individualize should not be "banned" words. We as Toolmark examiners use these words to describe the the individualizing characteristics we see. To date no two tools have ever been found, to my knowledge, that produce exactly the same toolmarks as such the unique paterens of toolmarks are individual in nature.	Remove these words from the shall not use list.	Reject: Section 5 was re-written to remove expression requirements.
176	5.2.1		T	From the way this is worded with uniqueness/individualize/individualization in quotes, it seems to me that I can bust out the thesaurus and find other words. Like, can I say the random characteristics are different from one firearm to the next? Specific to a particular firearm? Distinctive to a firearm?  Is the restriction simply in the use of the term "uniqueness"? And for the next part, "individualize" or "individualization"?	I know usually these kinds of documents don't tell you what to do to meet the standard. But this is a good place for some e.g., examples of what would be appropriate words to use.	Reject: Section 5 was re-written to remove expression requirements.
190	5.2.1			an expert should be allowed to give an <u>opinion</u> that something is unique and individual based on training and experience. Ultimately if we say there are enough random characteristics to determine it was identified as being fired in that gun how can we not conclude that they were unique and individual. I believe this is wrong and watering down the science we have been testing for years...	remove: assert that a 'source identification' or a 'source exclusion' conclusion is based on the 'uniqueness' of an item of evidence.  ☒ use the terms 'individualize' or 'individualization' when describing a source conclusion.	Accept with modification: Section 5 was re-written to remove expression requirements.
192	5.2.1		Technical	Our conclusions are literally based upon the uniqueness (perceived or proven) of the various characteristics observed (class, subclass and individual/random). Identifying specific "forbidden words" does not solve the problem of overstating certainty.	Amend section to state only: A conclusion provided during testimony or in a report shall be sated as an examiner's decision/opinion and it shall not be asserted that it is based upon statistically derived or verified measurements or comparison to all other firearms or toolmarks.	Accept with modification: Section 5 was re-written to remove expression requirements.
223	5.2.1		T	"in a report is ultimately an examiner's decision." Although a decision or conclusion is made during the course of analysis we testify and report or opinion. We are in court at expert witnesses to give opinions.	Change decision to opinion or include it.	Reject: Section 5 was re-written and no longer contains the word "decision".
224	5.2.1		T	Bullet points 1 and 2, the word uniqueness, individualize and individualization are terms that are stated to not be used; however, these terms are not defined in the document. Additionally, this blanket statement in general is problematic since stating that "uniqueness" is not possible it goes against the very premise of all material sciences. Factually, differences can even be observed at an atomic level.	Prefer the wording that was provided in the original OSAC draft.	Reject: Section 5 was re-written to remove expression requirements.
243	5.2.1		T	"in a report is ultimately an examiner's decision", yes a decision is made during the course of working the case, but we testify to our opinion. We are in court at expert witnesses to give opinions	change decision to opinion	Reject: Section 5 was re-written and no longer contains the word "decision".
244	5.2.1		T	bullet points 1 and 2, the word uniqueness, individualize and individualization are term that are stated to not be used; however, these terms are not defined in the document.	The first two bullet point should be removed. When reading the "expressing conclusions" section, all the other statements sufficiently cover what should be/should not be conveyed to jurors	Reject: Section 5 was re-written to remove expression requirements.
271	5.2.1		T	Even if the topics were in scope there are issues with these points. Why is "source identification" used here when the document uses "same source"? Why "source exclusion" here when the document uses "different source"?	Section should be removed.	Reject: Section 5 was re-written to remove expression requirements.

272	5.2.1		T	I strongly disagree with prohibiting the use of the terms "individualize" or "individualization". These are well established and well defined terms within the discipline. No justification is given for prohibiting their use. Given how established these terms are, I would expect justification.	Remove prohibition of "individualize" and "individualization"	Reject: Section 5 was re-written to remove expression requirements.
273	5.2.1		T	The text "A conclusion provided during testimony or in a report is ultimately an examiner's decision and is not based on a statistically-derived or verified measurement or comparison to all other firearms or toolmarks." is not necessarily correct. An examiner may use new analysis tools (such as virtual microscopy and associated surface analysis methods) to establish a statistically derived or verified measurement through their examination process. Thus a blanket statement like that which appears in the current draft is not always correct.	I believe this section should be removed. But if it stays a possible rewrite is "A conclusion provided during testimony or in a report is ultimately an examiner's decision and is not based on comparison to all other firearms or toolmarks."	Reject: Section 5 was re-written to remove expression requirements.
297	5.2.1		T	I feel like the first two bullet points undermine the purpose of rendering a same/different source conclusion, algorithmic studies/databases of consecutively manufactured part studies support the idea that sequentially manufactured tool surfaces have individualized constellations of random markings. (e.g. NIST RPDM)	Remove first two bullet points	Reject: Section 5 was re-written to remove expression requirements.
302	5.2.1			remove 'assert that a 'source identification' or a 'source exclusion' conclusion is based on the 'uniqueness' of an item of evidence.'	delete 'assert that a 'source identification' or a 'source exclusion' conclusion is based on the 'uniqueness' of an item of evidence.'	Reject: Section 5 was re-written to remove expression requirements.
303	5.2.1			remove 'use the terms 'individualize' or 'individualization' when describing a source conclusion.'	delete 'use the terms 'individualize' or 'individualization' when describing a source conclusion.'	Reject: Section 5 was re-written to remove expression requirements.
333	5.2.1		T	Terms like match or individualize indicate certainty in the conclusions. Hence, they may mislead lay person stakeholders, such as the jury.	Add the term 'match': "- use the terms 'individualize' or 'individualization', or 'match' when describing a source conclusion."	Reject: Section 5 was re-written to remove expression requirements.
348	5.2.1		E	In general I think it is a bad policy for a document like this to be word police. Since "uniqueness" is in quotes, does this mean that only that word is not allowed? You also have "individualize" or "individualization". Does this mean you cannot use the term individual? If so, why not make an appendix that has all of the phrases that we cannot use .	Omit areas of the criteria where there are quotes of specific words or phrases that cannot be used.	Reject: Section 5 was re-written to remove expression requirements.
355	5.2.1		T	"A conclusion ... is ultimately an examiner's <b>decision</b> ...". No, it is their expert opinion based on their evaluation of the evidence at hand.	Change "decision" to "opinion"	Reject: Section 5 was re-written and no longer contains the word "decision".
357	5.2.1		T	First statement in bulleted list of "shall nots": <i>shall not assert that a source ID or source excl. is based on uniqueness of an item.</i> This is literally our job. The whole purpose of comparative examinations of toolmarks is to form an opinion on whether or not item X was fired in item Y.	Ditch this bullet point	Reject: Section 5 was re-written to remove expression requirements.
386	5.2.1		T	"Uniqueness" is what this discipline is based on. As long as its qualified correctly by saying there is no absolute certainty and its my opinion and not a scientific fact, then preventing people from saying certain words is pretty silly. If you don't believe there is uniqueness, then you don't believe that TM ID is a valid science.	Return this limitation to what was written in the OSAC document	Reject: Section 5 was re-written to remove expression requirements.
392	5.2.1		T	Not allowing the use of uniqueness or individualize is not consistent with scientific community or scientific research done in metallurgy or metrology or in OSAC document	Allow use of unique or individual	Reject: Section 5 was re-written to remove expression requirements.

394	5.2.1 5.2.5.			<p>This is regarding the proposed Standard Scale of Source Conclusions Criteria for Toolmark Examinations. I found it difficult to cite specific examples in need of editing or correction. Instead, I would like to offer that the general tone and language, while similar to the OSAC Standard Scale document, is used for the unwarranted inclusion of:</p> <p>5.2.1 (specifically, assert that a 'source identification' or a 'source exclusion' conclusion is based on the 'uniqueness' of an item of evidence and use the terms 'individualize' or 'individualization' when describing a source conclusion. )</p> <p>5.2.5 (specifically, use the expressions 'reasonable degree of scientific certainty,' 'reasonable scientific certainty,' or similar assertions of reasonable certainty in either reports or Testimony.)</p>	<p>Please consider removing the cited verbiage, or submitting the guidance document for review by a significant number of practicing firearms examiners in various states and countries in order to obtain a true representative example (which is the basis of the science which is foundation of the document).</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
144	5.2.1 bullet #1		T	<p>Uniqueness can be asserted. It is supported by science that all items created by man or nature are unique at a certain level of scrutiny. The question is whether or not FA/TM examiners employ scientific methods, instrumentation and comparison techniques that are sufficiently able to observe and discern similarities and differences between these unique (level 3) characteristics. There is a significant amount of information to support the two underlying premises that (1) Items are in fact unique and different tools create different toolmarks at some level and (2) FA/TM examiners utilize instrumentation and methods that are able to discern these differences at a high level of accuracy.</p>	<p>remove this bullet point (assuming that section 5 is not removed entirely)</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
145	5.2.1 bullet #2		T	<p>There is not a problem with using these terms as long as the examiner is stating that it is their OPINION that the detail the used for the same source conclusion is Level 3 detail (therefore individual/ unique/ etc.) At that point the opposing side has the option of cross examination or brining in an outside expert to refute the claim of Level 3 detail. Perhaps they want to argue that the examiner mis-attributed detail as level 3, when it is actually Level 1 (class) or Level 2 (subclass). If we can agree that there is infact unique detail present, which surface metrologists such as Ted Vorberger agree that there are uniquenesses, then the arguement shifts to the examiner's ability to correctly classify the three types of detail. I am fine with having discussions about training, and proficiency all day, but the arguement against the existence of unique features is not supported by the science of surface metrology nor is supported by the many machine based studies that have been conducted in our discipline.</p>	<p>remove this bullet point (assuming that section 5 is not removed entirely)</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
50	5.2.2		E	<p>Along with being barred from saying the error rate is zero, examiners should also be barred from characterizing the error rate as negligible.</p>	<p>Add "or neglible" after "zero"</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>

51	5.2.2		E	While research into error rates in firearm-related toolmark comparison has been the subject of criticism from multiple groups, studies from which to derive error rates for non-firearm toolmark comparisons are non-existent. Moreover, there are practical reasons to believe that error rates for non-firearm related toolmark comparison would be higher than those for firearm-related (e.g. less focus in training, higher fail rate for toolmark PTs compared to firearm, etc.).	The standard should require that any form of source attribution conclusion be accompanied by error rates <i>applicable to the type of comparison at issue</i> (i.e. firearm, non-firearm), reasonably estimated on the basis of studies in the published, scientific literature. The standard should also note the lack of validation data currently available for non-firearm toolmark comparisons.	Reject: Requiring reporting error rate with different types of source conclusions is beyond the scope of this document.
77	5.2.2			"5.2.2" the use of the terms in this section "infallible" "zero error rate" seems in potential contradiction with section 4.2.1.2.1 and its use of the terms "physically impossible" and "zero probability"; this reviewer finds the former section more compelling than the banning of terms in the latter.		Reject: Section 5 was re-written to remove expression requirements.
327	5.2.2		T&E	Add the terms "negligible" and "insignificant"	rewrite as ... or have a negligible, insignificant or zero error rate.	Reject: Section 5 was re-written to remove expression requirements.
104	5.2.3			This section prohibits the use of "statistic or numerical degree of probability". I feel that this in direct contradiction with probabilistic language incorporated in previous sections of this document such as "proposition" "strong/week support". These terms are directly associated with probabilistic supports for conclusions such as likelihood ratios.		Reject: Section 5 was re-written to remove expression requirements.
177	5.2.3		T	An examiner shall not provide a conclusion that includes a statistic or numerical degree of probability except when based on relevant and appropriate data. This conflicts with the "zero probability" from 4.2.1.2.1. See my comment on line 5 above.	If the "zero probability" from 4.2.1.2.1 is meant to be an exception to this standard, that should be included here in the explanation. Could be a note.  An exception can be made when it is physically impossible for the examined items to have been marked by the same source tool based on an incompatibility in class characteristics. In this instance, the conclusion may be expressed as having "zero probability".  If there is not meant to be an exception, then my comment from line 5 stands and this standard does not need to be changed.	Reject: Section 5 was re-written to remove expression requirements.
309	5.2.3		T	Add "source" before "conclusion" to clarify the scope of this limitation	Add "source" before "conclusion"	Reject: Section 5 was re-written to remove expression requirements.



328	5.2.4		T	<p>Current wording: "An examiner shall not cite the number of examinations conducted in the forensic firearms/toolmarks discipline performed in his or her career as a direct measure for the accuracy of a conclusion provided. An examiner may cite the number of examinations conducted in the forensic firearms/toolmarks discipline performed in his or her career for the purpose of establishing, defending, or describing his or her qualifications or experience." *** This effort to preclude errors like those that occurred in many instances of testimony by hair examiners is to be commended. But the section needs more specifics to provide guidance for examiners. Examinations performed where ground truth is not known cannot provide a measure of accuracy and cannot provide meaningful data on rarity of a random characteristics or set of characteristics. Thus the examiner should not rely on those examinations when assessing whether a set of random characteristics "fall within the range of variability of marks produced by the same tool (KSST) and are inconsistent with the amount of disagreement demonstrated by toolmarks known to have been produced by different tools (KDST)," . And the discussion in 4.2.3.2 correctly does not include prior examinations and instead focuses on training and professional obtained knowledge. Therefore the number of examinations conducted by an examiner does not address the examiners qualifications to form the opinion presented and neither the examiner nor the factfinder should consider the number of examinations conducted to weigh the reliability of the opinion. While examinations on, for example, certain types of weapons may be relevant to specific issues involving experience with a specific type of firearm, those instances should be tailored appropriately. This is true for non forensic experts as well. How many procedures a doctor has performed tells one nothing about how much experience they have performing a specific procedure. And nothing about the number of times they have performed a</p>	<p>A possible rewrite might be as follows: "An examiner shall not cite or estimate the total number of examinations conducted in their career as measure of performance, accuracy, qualification or experience. Instead these should be addressed based on an examiner's testing (where ground truth is known), training and professional knowledge, and where applicable specific experience examining a specific type of tool or firearm."</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
12	5.2.5		T	<p>A scientific discipline should not say false things even if required to do so by a judge</p>	<p>Delete everything after the word "testimony"</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
43	5.2.5		E	<p>The concept of "practical certainty" and "practical impossibility" utilized in the SDFTE Theory of ID was always contrary to reality and lacked scientific support. How could that chance of error be even poractically impossible when errors occur across multiple validation studies, proficiency tests, and in casework??? But this standard does not do away with that terminology. That must change, expecially given that this standrad already disavows the arguably lesser claim of "reasonable scientific certainty"</p>	<p>Add "practical impossibility" and "practical certainty" to this sections list of prohibited claims.</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
52	5.2.5		E	<p>"Practical certainty" and "practical impossibility" are more extreme than "reasonable scientific certainty", which is barred by this standard. Practical certainty and practical impossibility should also be prohibited.</p>	<p>Add "practical impossibility" and "practical certainty" to this section's list of prohibited claims.</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
64	5.2.5		T	<p>Does "the likelihood another tool made these marks is so remote it is a practical impossibility" as cited in the AFTE Theory of Identification apply here as a banned statement?</p>	<p>This statement may need to be strengthened and made more clear if it is a "shall not" statement because there are many similar terms and others may argue some terms apply here and others do not. This also has major implications for many labs. I recommend not using any "shall not" statements.</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>

105	5.2.5			<p>This section is problematic in that the conclusion being reported is the examiner's opinion. If an examiner is not 100% certain in his/her own opinion, then they have no business authoring that conclusion and should be more conservative in the conclusion reached (i.e. one of the levels of inconclusive). Additionally I do not find it appropriate to control the language of an examiner's opinion (as long as it is supported by the science), and then add the last portion of this section "unless required to do so by a judge . . .". My opinion is my opinion. Including in a standard that an examiner must change the language of their opinion at a judge's order is outside the scope of this document. That situation is between the specific examiner and the judge, and hopefully the examiner will stand their ground in the original language of their opinion.</p>		<p>Reject: Section 5 was re-written to remove expression requirements.</p>
146	5.2.5		T	<p>It is unclear why the phrases "reasonable degree of..." should not be allowed. Therefore the phrase "or similar assertions of reasonable certainty" does not have much meaning. What is similar? The use of the words "reasonable" or "certainty"? One or the other? This is ambiguous. Reason should be given why these terms and phrases are not allowed. E.g. they are not clearly defined anywhere and have different meanings based on where and how they are used.</p>	<p>Explain why statements of "reasonable degree" should not be used. (assuming that section 5 is not removed entirely)</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
153	5.2.5		T	<p>The problem with this statement is that unless I am 100% certain that a tool produced a toolmark . . . I will go inconclusive. If I ID something, in my opinion, I am 100% certain. To say I've ID'ed a toolmark but then to say I'm not certain my evaluation is correct is a disservice to the science.</p>	<p>An explanation of what an ID means is all that is required and that has been covered in previous section (OSAC document section 5 is sufficient).</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
191	5.2.5		E	<p>This section basically says "we will not do this unless we are told we have to to this". This makes the sentiment weak and the intended purpose gets lost.</p>	<p>Section would be stronger if left at : "An examiner shall not assert that two toolmarks originated from the same source with absolute certainty."</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
329	5.2.5		T&E	<p>This section should be split into three sections. No jurisdiction requires 100 percent certainty. Thus this prohibition is based on the claim being incorrect as no method or technique is infallible and should be a standalone point. The other phrases have no scientific meaning and thus should not be used in reports. And an examiner should convey this point to the lawyers and the court and only use the phrases in testimony if required by to do so by a judge or applicable law.</p>	<p>A possible rewrite might be as follows: "5.2.5 An examiner shall not assert in testimony or reports that two toolmarks originated from the same source with absolute or 100% certainty. 5.2.6 An examiner shall not use the expressions 'reasonable degree of scientific certainty,' 'reasonable scientific certainty,' or similar assertions of reasonable certainty in reports. 5.6.7 An examiner shall inform counsel and the court that these phrases have no scientific meaning and use them in testimony only when required to do so by a judge or applicable law. "</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>
189	5.2.5		T	<p>This is roughly analogous to mandating that examiners refuse to allow an analysis to be evaluated according to the Frye standard. It is not the responsibility of forensic scientists to encourage or refuse a legal standard because a segment of lawyers does not like it.</p>	<p>Delete "or use the expressions 'reasonable degree of scientific certainty,' 'reasonable scientific certainty,'"</p>	<p>Reject: Section 5 was re-written to remove expression requirements.</p>

334	5.2.6		T	<p>Published research suggest that examiners can be unconsciously biased by task-irrelevant information to which they are exposed to (e.g., Gardner, B. O., Kelley, S., Murrie, D. C., &amp; Dror, I. E. (2019). What do forensic analysts consider relevant to their decision making? Science &amp; Justice, S1355030618302867. <a href="https://doi.org/10.1016/j.scijus.2019.04.005">https://doi.org/10.1016/j.scijus.2019.04.005</a>; Almazrouei, M. A., Dror, I. E., &amp; Morgan, R. M. (2019). The forensic disclosure model: What should be disclosed to, and by, forensic experts? International Journal of Law, Crime and Justice, 59, 100330. <a href="https://doi.org/10.1016/j.ijlcrj.2019.05.003">https://doi.org/10.1016/j.ijlcrj.2019.05.003</a>). Hence, it is important to offer examples about what is considered task-irrelevant information within toolmark examination. It is great that the document lays out clear examples on what information is task relevant in toolmark examination (see Sections 4.2.1.2.2 and 4.2.3.2), But, the document does not provide any indication or examples of potentially biasing, task-irrelevant information. Such detail would make it clearer for practitioners/ labs to minimize unconscious biases when reported conclusions.</p>	<p>Suggested amendment: "5.2.6 An examiner shall solely rely on task-relevant information in making their conclusions (see Sections 4.2.1.2.2 and 4.2.3.2 for examples of task-relevant information). Task-irrelevant information, such as [the SC should include examples of task-irrelevant information], shall not be relied upon in formulating the conclusions. In cases where examiners were exposed to task-irrelevant information prior to reporting conclusions, the exposure must be documented for transparency purposes."</p>	<p>Reject: The following sentence was included in section 5 to address potential bias: "The examiner shall be aware of and intercept the negative effects of bias at the points they impact the process of making source conclusions." A comprehensive list of potential task-irrelevant information is not possible.</p>
111	Bibliography		E	<p>The document contains no bibliography, as the OSAC document does. A bibliography serves as a foundation to support the information within the standard. At a time when our field is facing legal challenges in court regarding the scientific nature of our work, a bibliography of references supports the information within the standard. A standard as important and impactful as the Range of Conclusions needs a bibliography. It guides every opinion rendered from comparisons. A bibliography adds weight and credit to the standard, its foundation, and the opinions derived when applying the standard.</p>	<p>Add a bibliography to support the information contained within the written standard.</p>	<p>Accept</p>
381	bibliography		technical	<p>In the July 2021 OSAC brief, Professor David Kaye wrote in part: "To help satisfy the proof requirements of Rule 702 (both as it stands and as it might be amended), subcommittees drafting standards for making findings and for reporting or testifying should specifically cite the scientific literature that supports each part of the standard. Valid estimates of potential error rates (or related statistics on the accuracy of results), or procedures to arrive at these estimates, should be part of such standards."</p>	<p>This was written as guidance to OSAC as part of the changes to 702 from the Advisory Committee on Evidence Rules. Therefore, it would be prudent to add error rate studies to this document such as: Ames I, Ames II, and Chapnick.</p>	<p>Accept: The WG understands NIST is currently working on a comprehensive review of the scientific foundation of the discipline; when that has been published and reviewed, the WG believes it should be added to the bibliography</p>