

29-Jun-20
ASB BPR 060, Guidelines for Barrel and Overall Length Measurements for Firearms

Note: a specific Proposed Resolution must accompany each comment or it cannot be considered.

#	Section	Type of Comment (E)	Comments	Proposed Resolution	Final Resolution
3	Foreword	E	"Estimation of uncertainty is achieved through repeated measurements..." implies that measurement repeatability is the only source of uncertainty considered in this guideline	Replace "Estimation of uncertainty is achieved through" with "Estimation of uncertainty is achieved through the analysis of possible sources of measurement uncertainty and includes repeated measurements..."	Accept
4	Foreword	E	The second paragraph of the foreword classifies the document as a standard. However, the title of the document classifies it as a best practice recommendation.	Replace "standard" with "best practice recommendation"	Accept. The term "standard" has been replaced.
25	Foreword	E	This is still an idiosyncratic an inadvisable use of a Foreword. This is information that belongs in the main body of the text, not in the front matter.	Move any relevant information "Barrel lengths and overall lengths are dimensional specifications of firearms that can be used as descriptors or that can be mandated by law. This document describes procedures for measuring the barrel length and overall length of firearms and for estimating the uncertainty of those measurements. Procedures are outlined for different types of firearms to determine their conformance to the specifications. Estimation of uncertainty is achieved through repeated measurements by all lab personnel responsible for barrel length and overall length measurements. Annex A provides an example illustrating measurement results and uncertainty evaluation." into "Background"	Reject: Forward is the appropriate location for this introduction to the document.
26	3	T	It wouldn't hurt to include a definition of "bore axis" and "axis of the bore".	"Bore axis: the longitudinal axis of the bore"	Accept with modification. Bore axis added to list of terms in introduction paragraph of Section 3.
27	3.1 and 3.2	E	Listing the section as part of an endnote callout is unusual and potentially confusing, particularly when there are frequent references to different sections of this document.	Address the Section information as a footnote citation of reference 9.	Accept with Modification. Adjusted the reference to the VIM.
5	4.1	E	The unit symbol 'in.' for inch is not preferred.	Replace 'in.' with 'in', ' " ', 'inch', or 'inches' throughout the document.	Reject: in. is ASB Style
6	4.2.2	T	Accreditation requires current calibration certificates for the measuring device used when reporting traceable measurements, or, alternatively, for the reference length standard used to calibrate the measuring device. The current use of the word "should" instead of "shall" may give the impression that calibration certificates are optional.	Replace "should" with "shall" or clarify this requirement for accreditation. Replace "measuring device" with "measuring device or reference length standard"	Accept.
7	4.2.3	T	Recording the unique identifiers of the measuring devices used should be mandatory when reporting traceable measurement results.	Replace "should" with "shall"	Reject: As this is a best practice recommendation, the CB has determined that this recommendation is best to remain a "should". Some labs only utilize a single device so the recommendation is appropriate.
28	4.2.3	T	Common devices aren't necessarily a good idea. I've heard of some people using string. I don't think it's actually common, but can't exclude the possibility, and it's not a good idea in any case.	Change "Common" to "Appropriate"	Reject with modification, "appropriate" is not recommended to be used as it not defined as to how "appropriate" is measured. "Common" deleted. Sentences begins with "Devices used..."
29	4.2.3	T	Wording may make overly restrictive implications	Change "...and overall lengths (BL-OL) are..." to "...and overall lengths (BL-OL) include...", remove "steel", add "measuring squares".	Accept with modification. Sentence changed to "Devices used to measure barrel and overall lengths (BL-OL) may include, but are not limited to, measuring tapes, measuring squares, rulers, measuring rods, and caliper devices."
30	4.2.4	T	Including the longest part of an uneven muzzle should probably be more strongly recommended than "should", though I don't know that a BPR can make anything mandatory.	Perhaps this should instead be a reminder that in the case of an unevenly cut or manufactured muzzle, the measurements defined later in the document include the forwardmost portion of the muzzle. An illustration might be a good idea.	Accept with modification. Previous section 4.2.4 deleted, content moved to previous section 4.2.5 (now 4.2.4) and modified for clarification.
31	Figure 1	E	The superscript info in the caption would normally be in a footnote.	Put it in a footnote.	Reject: As it is an adapted figure, the citation to the bibliography is correct.
32	4.3.1.1	E	Awkward wording.	"The length of a revolver barrels is the distance from the rear of the forcing cone to the forwardmost point of the muzzle, measured parallel to the bore axis."	Accept with modification. Sentence now reads: "The length of a revolver barrel is the distance from the rear of the forcing cone to the forwardmost point of the muzzle, measured parallel to the bore axis."
33	4.3.1.2	T	Ruler doesn't necessarily have to be steel.	Remove "steel".	Accept. Revised.
34	4.3.1.2	E	Missing comma	"...to the axis of the bore, to determine..."	Accept with modification. Revised to "bore axis"
35	4.3.1.2	E	"Muzzle bore" is odd and potentially confusing.	Remove "muzzle".	Accept. Revised.

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36	4.3.1.3	E	"Consideration should be taken to determine how the starting point can be accurately achieved," is awkward and offers no new information.	Delete.	Reject with modification: Paragraph now reads: "Measuring Rod: A measuring rod may be used to measure barrel length; however, consideration should be taken to determine how the starting point can be accurately achieved . A block may be held in contact with the muzzle or forcing cone end of the firearm, perpendicular to the bore axis, to align the end of the measuring rod with the starting point of the barrel . The material of the measuring rod should be soft enough that it does not scratch the barrel. Test firing should be completed prior to barrel measurements made with a measuring rod."
37	4.3.1.3	E	Awkward wording.	A block may be held in contact with the muzzle or forcing cone end of the firearm, perpendicular to the axis of the bore, to align the end of the measuring rod with the starting point of the barrel .	Accept with modification: Paragraph now reads: "Measuring Rod: A measuring rod may be used to measure barrel length; however, consideration should be taken to determine how the starting point can be accurately achieved . A block may be held in contact with the muzzle or forcing cone end of the firearm, perpendicular to the bore axis, to align the end of the measuring rod with the starting point of the barrel . The material of the measuring rod should be soft enough that it does not scratch the barrel. Test firing should be completed prior to barrel measurements made with a measuring rod."
38	4.3.1.3	E	"The material of the measuring rod should be sufficiently soft that it does not scratch the barrel," does not work, grammatically.	"The material of the measuring rod should be sufficiently soft, so that it does not scratch the barrel."	Accept with modification: Paragraph now reads: "Measuring Rod: A measuring rod may be used to measure barrel length; however, consideration should be taken to determine how the starting point can be accurately achieved . A block may be held in contact with the muzzle or forcing cone end of the firearm, perpendicular to the bore axis, to align the end of the measuring rod with the starting point of the barrel . The material of the measuring rod should be soft enough that it does not scratch the barrel. Test firing should be completed prior to barrel measurements made with a measuring rod."
39	4.3.1.3	T	If you're going to note measuring rod softness, it would be best to note that barrel measurements are best done after obtaining any necessary test fires. It seems to be pretty rare, but heavy lead deposits can affect how marks reproduce, and you aren't going to find a measuring rod so soft that it won't affect lead.	Add "Barrel measurements made by placing a rod down the barrel are best made after completing any test fires required for comparison purposes."	Accept with modification: Paragraph now reads: "Measuring Rod: A measuring rod may be used to measure barrel length; however, consideration should be taken to determine how the starting point can be accurately achieved . A block may be held in contact with the muzzle or forcing cone end of the firearm, perpendicular to the bore axis, to align the end of the measuring rod with the starting point of the barrel . The material of the measuring rod should be soft enough that it does not scratch the barrel. Test firing should be completed prior to barrel measurements made with a measuring rod."
40	4.3.1.4	T	This wording is potentially confusing, as the jaws of the caliper are typically placed on the ends of the barrel, perpendicular to the axis of the bore.	"A revolver barrel may be measured by placing a caliper on the exterior of the barrel, with the main scale parallel to the axis of the bore (and the jaw surfaces perpendicular to the bore axis).	Accept. Revised.
41	4.3.1.4	E	"... to determine the barrel length" is redundant.	Delete.	Accept. Revised.
8	4.3.2.1	E	The sentence "All measurements should be made perpendicular to the bore axis at the farthest point of the barrel." is confusing and should represent a mandatory requirement as it defines the measurand.	Delete sentence. Replace in the first sentence "the distance parallel to the bore axis from the muzzle end to the breech face (with the action closed) represents the length of a barrel." with "the distance parallel to the bore axis from the breech face (with the action closed) to the farthest end of the muzzle represents the length of a barrel."	Accept with modification. Sentence revised to: "the distance parallel to the bore axis from the breech face (with the action closed) to the forwardmost point of the muzzle represents the length of a barrel!"
42	4.3.2.1	E	Awkward wording.	Change to "...the length is defined as the distance from the muzzle to the breech face (with the action closed), measured parallel to the bore axis."	Accept with modification. Paragraph revised.
43	4.3.2.1	E	"All measurements should be made perpendicular to the bore axis at the farthest point of the barrel." is confusing.	Delete. Can refer back to 4.2.4 if that is what this is getting at.	Reject. Reference to 4.2.4 is not needed, content repeated instead.
44	4.3.2.2	T	Given the caveats made in other sections and this being a measurement defined by the breechface in a closed action, it would be prudent to include warnings about recessed breechfaces, the exterior mating parts sometimes being the bolt carrier rather than the bolt (which may mislead as to the location of the breechface), and the build up area around a chamber possibly making it difficult to align an exterior measuring device with the axis of the bore.	Make the caveats described.	Accept. To 4.3.2.2 added the sentence, "An external measurement method may not be suitable for firearms that have recessed breechfaces or external parts that may make it difficult to determine the location of the breechface for alignment of the exterior measurement device.." To Section 4.3.2.3 added the sentence, "Care should given to use a rod with a diameter that does not interfere with the extractor."
45	4.3.2.2	T	A ruler doesn't necessarily have to be steel.	Delete "steel".	Accept. Changed
46	4.3.2.2	E	"Integral chamber" isn't in an adjectival form.	Change to "integrally-chambered". Or, you could probably just put "chambered".	Accept with modification. Revised to "with an integral chamber"

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1	4.3.2.3	T	For consistency add the statement listed in the proposed resolution.	The material of the measuring rod should be sufficiently soft that it does not scratch the barrel.	Accept with modification. Added a sentence to section 4.3.2.3. "The material of the measuring rod should be soft enough that it does not scratch the barrel."
9	4.3.2.3	E	The recommendation of a "soft" measuring rod is not limited to revolvers (4.3.1.3) and applies also to the firearms discussed in this section.	Add sentence from 4.3.1.3 "The material of the measuring rod should be sufficiently soft that it does not scratch the barrel." Alternatively, move this sentence to a general section that applies to both revolvers and firearms with an integral chamber.	Accept. It is easier to add a second sentence about a soft measuring rod than to reorganize the material.
47	4.3.2.3	T	Firing pins aren't the only the only thing that can keep you off the breech face.	Replace "...that the firing pin is not impeding..." with "... no components or bolt contours are preventing..."	Accept.
48	4.3.2.3	E	"Integral chamber" isn't in an adjectival form.	Change to "integrally-chambered". Or, you could probably just put "chambered".	Accept.
10	4.4.1	T	The measurement definition provided in this section is mandatory.	Replace "should" with "shall"	Reject. Sentence completely modified to remove recommendation and provide the necessary information instead.
11	4.4.1	T	Clarify measurand/procedure when parts are fixed to the muzzle.	Replace "furthest point of the muzzle." with "furthest point of the muzzle including fixed and/or non-readily removable parts."	Accept with modification. Text added to section 4.2.4 (previously 4.2.5) as it is appropriate for this text to be in the Measurands section.
49	4.4.1	E	I can find no definition of "tangential" that supports this usage. The ATF definition is straightforward, is in the public domain, and has a certain degree of legal relevance, so I'm not sure why something closer to that isn't being used. I guess maybe this is an attempt to acknowledge the pitfalls of determining a rearmost point when it doesn't fall directly on your scale and the fact that the apparent rearmost point can vary if you aren't aligned with the bore axis? If this is the case, it would probably be better to add a subsection or two which note those issues more fully, rather than trying to encompass a nuanced subject in a single sentence.	Change to something like: "The overall length of a firearm is the distance between the forwardmost point of the barrel and the rearmost portion of the firearm measured on a line parallel to the axis of the bore." "4.4.1.1 Since the rearmost point of a firearm almost never falls directly along the bore axis, it is particularly important to make sure that it is accurately represented in the measurement, e.g. using a square to ensure that the line between the rearmost point of the firearm and the measurement scale is perpendicular to the axis of the measurement, or using a caliper surface of sufficient size to contact the rearmost point when the bore axis and measurement axis are parallel." "4.4.1.2 Due to the sometimes complicated geometry of the rear of a firearm, misalignment of the bore axis and the measurement axis can cause additional measurement error due to misjudging what is the rearmost point".	Accept with modifications. Sections added with minor text modifications.
50	4.4.2	E ?	This is quite convoluted and I'm not sure what it is meant to be conveying. Is it saying that the measuring device has to be fit for this measurement?	"The overall firearm length should be determined using a device capable of making the measurement illustrated in Figure 1 (see section 4.2.3)."	Accept with modification, Section revised to: "4.4.2 An alignment device such as a square should be used to ensure that the line between the rearmost point of the firearm and the measurement device is perpendicular to the axis of the measurement device as illustrated in Figure 1."
2	4.4.3	T	This should be an option, not a requirement.	Change "shall" to "should"	Accept with modification. Modified to "may" with additional modifications to allow multiple measurements.
51	4.4.3	E	Comma	"...measurement, unless..."	No longer applies. Sentence full modified based on Comment 2.
12	4.5.2	T	Accreditation requires current calibration certificates for the measuring device used when reporting traceable measurements, or, alternatively, for the reference length standard used to calibrate the measuring device. The current use of the word "should" instead of "shall" may give the impression that calibration certificates are optional.	Replace "should" with "shall" or clarify this requirement for accreditation. Replace "measuring device" with "measuring device or reference length standard"	Accept.
13	4.5.3	T	The referenced procedures outlined in Sections 4.2 through 4.4 are mandatory, unless noted otherwise in those sections.	Replace "should" with "shall"	Reject. Appropriate as a recommendation.
14	4.5.4	E	Some of the key uncertainty factors listed affect uncertainty but are not necessarily sources of uncertainty	Replace "Key factors, which may potentially be sources of uncertainty, are as follows." with "Key factors, which may affect the uncertainty of measurement, include the following:"	Accept
15	4.5.4	T	In item 4, it should be a requirement to develop an uncertainty budget for each type of device used	Replace "A different uncertainty budget should be developed" with "An uncertainty budget shall be developed"	Accept.
16	4.5.4	T	Add note on a common lab policy where measurements are always rounded-up to the next higher scale hash mark	Add the following: "NOTE: Some labs have a policy specifying that any measurement value in-between the finest hash marks of a ruler is rounded-up to the next higher hash mark. This policy introduces an error (bias) in reported measurement values. The uncertainty budget in Annex A contains terms that address scale readability and round-off errors. The resulting increased expanded uncertainty alleviates the need for the policy."	Reject. Recommended note falls outside the scope of this document.
52	4.5.4	E	"Section 4.1" seems to be an unclear reference to section 4.1 of this document. So, it's really just a roundabout reference to reference 12, which has already been cited two or three times to the same end.	Delete.	Accept. Deleted.

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53	4.5.4	T	Is there an automated measurement system? All the measurements are manual.	Change to "Misreading the demarcations on an analog length scale. Analysts responsible for analog measurements should be trained to avoid this error."	Accept with modification. First sentence revised to read: "Misreading the demarcations on a length scale during a manual measurement"
54	4.5.4	T	"In addition, the laboratory should have a clear policy for identifying and dealing with outlier data points, which result from this type of error." makes it sound like this is the only way you can get an outlier.	"...points, which can result..." Unless it was meant to specify a policy to deal with outliers due specifically to this cause, in which case "...with outlier data points that result from this type of error."	Accept
55	4.5.5	E	Either the word "each" or ", barrel and overall length," is potentially confusing.	Change "each type" to "both types".	Accept with modification. "each type" remains, but "barrel and overall length" removed. The recommended modification is repetitive.
56	4.5.5	E	More than a day is a long time to spend taking a measurement.	Replace ", extending over more than one day." with ", and the study should include measurements taken on different days."	Accept with modification. Changed to '...by each participant. The measurements should be taken on more than one day.' Also, based on this modification, WG determined that all occurrences of "observer" are now "participant"
57	4.5.5	E	Comma	"... different lengths, close to the defined..."	Accept with modification. Comma added and sentence revised to: "...close to the relevant statutory minimum lengths." for clarification.
58	4.5.5 previously 4.5.6	E	This seems like it is still part of 4.5.5	Move to 4.5.5.	Accept.
59	4.5.5 previously 4.5.6	E	Need Colon	"...uncertainty might be:"	Accept. Colon added.
60	4.5.7 previously 4.5.8	T	Very unclear what this means.	"Data that was recorded but not included in the uncertainty estimation should be clearly identified?"	(now 4.5.7) Accept with modification. Changed to 'Recorded data not included in the estimation of uncertainty of measurement should be clearly identified.'
61	4.5.8 previously 4.5.9	T	"measured results" is potentially confusing because you aren't measuring a result.	Replace with "measurement data"	(now 4.5.8) Accept. Changed to 'To complete the analysis, measurement data should be recorded,...'
62	4.5.8 previously 4.5.9	T	"statistical variations" is potentially unclear. I looked it up and am still not 100% certain I know what it's meant to convey.	Replace with "statistical dispersion" as that will generate more concrete results when someone inevitably has to look it up.	(now 4.5.8) Accept with modification. Changed to 'recorded, the pooled standard deviation should be calculated, and uncertainty....'
63	4.5.8 previously 4.5.9	E	"Integrate" has meaning in math that might confuse the issue, so it's probably best avoided.	Replace "integrated" with "combined".	(now 4.5.8) Accept. Changed.
64	4.5.9 previously 4.5.10	E	Convolutd	"An spreadsheet of simulated data and analysis results is available in Annex A."	(now 4.5.9) Accept with modification. Modified to: A spreadsheet of simulated data and analyses results is available via a link in Annex A
65	4.5.10 previously 4.5.11	T	Ambiguous as to whether this means every time you measure something in casework you have to do at least one replication, or if you just have to do two measurements of casework material just one time.	Clarify.	(now 4.5.10) Accept. Changed to "Once uncertainties for BL-OL measurements are established, at least two measurements should be obtained for barrel length and at least two measurements should be obtained for overall length in casework."
66	4.5.11 previously 4.5.12	E	Unnecessary comma after endnote callout.	Delete	(now 4.5.11) Accept. Changed.
67	4.5.11 previously 4.5.12	E	Need comma before "guided"	Add comma	(now 4.5.11) Accept. Changed.
68	4.5.12 previously 4.5.13	E	The word "procedure" might lead one to think that the process only need be repeated when the methods in the manual are changed.	Substitute "practice".	(now 4.5.12) Accept with modification. Change the sentence to "4.5.12 The process described in Sections 4.5.2 to 4.5.8 or an equivalent process should be repeated when a change occurs for measurement of barrel length or overall length, such as the acquisition of a measuring device, a change in participants, or a change of methods."
17	Annex A	T	An alternative to pooling the reproducibility standard deviations obtained for different firearms is to choose the worst one.	Add sentence after "The four values of standard uncertainty are pooled..." stating "A conservative alternative to pooling the standard deviations is to choose the largest standard deviation."	Reject. The best practice recommendation is not meant to include every alternative method for estimating uncertainty of measurement (to include choosing the highest standard deviation), but it rather outlines the best method for estimation. Choosing the highest standard deviation inflates the uncertainty of measurement value and is therefore not considered best practice.
18	Annex A	T/E	In table A.1 of the spreadsheet, the rationale for the correction factor $\sqrt{(N-1)/(N-R)}$ is not clear.	Clarify the rationale for the correction factor and check its equation.	Accept. Text added to Annex A to provide an explanation of this detail.
72	Annex A/Table 1	T	Is the difference between the first pooled StDev and the highlighted figures a Bessel's correction? It would be nice if this were explained a bit more.	Add additional information about this step.	Accept. Same issue as the comment 18.

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19	Annex A	T	The spreadsheet describes the scenario where the scale used for OL/BL measurements is calibrated using a calibrated length standard. For this scenario, two additional uncertainty components need to be added: 1) scale readability, and 2) the observed scale error (if not corrected). If not corrected, the observed scale error can be conservatively included as a standard uncertainty.	Modify spreadsheet	Accept. Text added to Annex A to address this point.
20	Annex A	E	The spreadsheet contains helpful comments and tooltips describing various elements in the uncertainty evaluation form. However, the guideline would benefit from a structured explanation of the uncertainty evaluation procedure. The trigger pull guideline contains such a structured explanation in the main text.	Augment Annex A with a structured explanation of the uncertainty evaluation procedure and uncertainty components.	Accept. We expanded Annex A with supplemental information.
21	Annex A	E	Spelling error in caption Table A.3	Replace "Estmation" with "Estimation"	Accept. Changed.
69	Annex A	T	The spreadsheets aren't, in themselves, a computer program; you can't make source code available.	Replace "source-code" with "current" and/or "Microsoft Excel," or delete it.	Accept. Changed to 'A spreadsheet, which may be obtained...'
70	Annex A	E	Incorrect endnote callout.	Change to "10".	Accept. Changed.
71	Annex A	E	Table callouts don't match Table labelling. Are also called out as "Sheets" sometimes.	Reconcile naming scheme.	Accept. Attempted to make calls to the sheets and tables consistent.
22	Annex B	E	Add reference to ATF ruling on reconfigured firearms	U.S. Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives, Office of the Director, Ruling 2011-4 "Pistols Configured from Rifles; Rifles Configured from Pistols," July 2011.	Accept. Reference to be added.
23	Annex B	E	Add reference to SWGGUN guidelines on barrel and overall length measurements of firearms	Scientific Working Group for Firearms and Toolmarks (SWGGUN), "SWGGUN Guidelines: Barrel and Overall Length Measurements of Firearms," AFTE Journal, 50(4), 2018.	Accept. Reference to be added.
24	Annex B	E	Add reference to paper by Chris Price on barrel and overall length measurements of firearms	Chris Price, "Barrel and Overall Length Measurements of Firearms: a UK Perspective," AFTE Journal, 51(4), 2019.	Accept. Reference to be added.