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Standard for Verification of Source Conclusions in Toolmark Examinations

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Academy Standards Board
410 North 21st Street
Colorado Springs, CO 80904

Foreword

This document is intended to provide a standard for the verification of toolmark source conclusions by a second examiner. This document takes into consideration the current state of professional practices and scientific research on contextual bias and confirmation bias.

The American Academy of Forensic Sciences established the Academy Standards Board (ASB) in 2015 with a vision of safeguarding Justice, Integrity and Fairness through Consensus Based American National Standards. To that end, the ASB develops consensus based forensic standards within a framework accredited by the American National Standards Institute (ANSI), and provides training to support those standards. ASB values integrity, scientific rigor, openness, due process, collaboration, excellence, diversity and inclusion. ASB is dedicated to developing and making freely accessible the highest quality documentary forensic science consensus Standards, Guidelines, Best Practices, and Technical Reports in a wide range of forensic science disciplines as a service to forensic practitioners and the legal system.

This document was revised, prepared, and finalized as a standard by the Firearms and Toolmarks Consensus Body of the AAFS Standards Board. The draft of this standard was developed by the Firearms and Toolmarks Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

Questions, comments, and suggestions for the improvement of this document can be sent to AAFS-ASB Secretariat, asb@aafs.org or 410 N 21st Street, Colorado Springs, CO 80904.

All hyperlinks and web addresses shown in this document are current as of the publication date of this standard.

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Keywords: *comparison, primary examiner, quality check, verification.*

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Standard for Verification of Source Conclusions in Toolmark Examinations

1 Scope

This document provides requirements for conducting verifications of source conclusions arising from forensic toolmark comparisons. This document is limited to the process of performing a quality check of the source conclusions reached by the primary firearm and toolmark examiner in a case and does not address or consider other types of technical casework review.

2 Normative References

There are no normative reference documents. Annex A, Bibliography, contains informative references.

3 Terms and Definitions

For purposes of this document, the following terms and definitions apply.

3.1
primary examiner
The initial examiner conducting the forensic examination, recording their source conclusions, and authoring a report of their findings.

3.2
source conclusions
An opinion of same source, an opinion of different sources, or an inconclusive opinion

3.3
task-relevant[a]
The information that is necessary for drawing conclusions:

a) about the propositions in question;

b) from the physical evidence that has been designated for examination;

c) through the correct application of an accepted analytic method by a competent analyst.

3.4
verifier
The examiner tasked with reaching independent source conclusions regarding evidence examined by the primary examiner.

[a] https://www.justice.gov/ncfs/file/818196/download

4 Requirements

4.1 Extent of Verification

All (100%) of the primary examiner's source conclusions in firearm and/or toolmark comparisons shall be subjected to the verification process. Value/no value determinations should also be subject to the verification process.

4.2 Method

The Forensic Science Service Provider (FSSP) shall implement written procedures for verification. The FSSP shall implement policies for the assignment of verifiers. Whenever practicable, the primary examiner shall not assign their own verifier, and the verifier should have no prior knowledge of the primary examiner's source conclusions (or value/no value determination).

For a portion of verifications, the verifier shall not be informed of the primary examiner's source conclusion(s) nor be exposed to information that is not task-relevant prior to reaching their own source conclusion(s). The FSSP shall conduct a risk assessment[2] to determine the percentage of verification to be conducted in this manner. The FSSP shall document and retain the risk assessment record and supporting data justifying the portion of cases requiring this level of verification.

For the remainder of verifications, the assignment of the verifier shall take into consideration factors such as staff size and availability, potential for confirmation bias by particular staff members due to known exposure to task-irrelevant case information, or other needs and requirements of the FSSP.

Verifications are traditionally conducted by physically providing the evidence to the verifier and shall be made available at the request of the verifier. Alternate methods of verification, such as live video conferencing, may be conducted where 1) the technology and process is sufficient to conduct a valid verification and 2) they satisfy the verifier and other elements of the standard.

4.3 Item Identity Check

As with all casework, it is the responsibility of the primary examiner to ensure that the compared items are correctly controlled. It is the primary examiner's responsibility to present the correct items to the verifier for the verification process. However, it is also incumbent on the verifier to ensure the proper items have been compared during their verification. Therefore, the FSSP shall have a written procedure for ensuring compared items are correctly controlled, to include securely marking the evidence items (whenever possible) prior to comparison and having the verifier deliberately check the identity of each item immediately before or after they are verified.

4.4 Resolution of Conflicting Conclusion(s) between Primary Examiner and Verifier

The FSSP shall have a policy for the arbitration of differences in source conclusion(s) between the primary examiner and verifier that requires the arbitration information to be documented in the case record. The arbitration information shall be descriptive enough for an outside expert to be able

to follow the steps that occurred and discern all conclusions (original, intermediate, and final) reached by each examiner/verifier throughout the process.

4.5 Documentation of Verifications

The following information shall be documented and preserved:

— the identity of the verifier (e.g., the first and last name);

— the date(s) of verification;

— the basis for the verifier's source conclusion (e.g., what marks were compared);

— the verifier's conclusion(s);

— affirmation of the verifier's item identity check;

— the method of review [e.g., light comparison microscopy (LCM), virtual comparison microscopy (VCM), blind verification, non-blind verification];

— any disagreement of source conclusions and their resolutions, including any change(s) to original conclusion(s).

Annex A
(informative)

Bibliography

The following bibliography is not intended to be an all-inclusive list, review, or endorsement of literature on this topic. The goal of the bibliography is to provide examples of publications addressed in the standard.

1] Dror, I. Practical solutions to cognitive and human factor challenges in forensic science. *Forensic Science Policy and Management*, 2013, vol. 4, pp. 105-113.

2] ISO/IEC 17025:2017, General requirements for the competence of testing and calibration laboratories, section 8.5 Actions to address risks and opportunities (Option A), pp. 21-22.[b]

3] Kerstholt, J., et al. Does suggestive information cause a confirmation bias in bullet comparisons? *Forensic Science International*, 2010, vol. 198, pp. 138-142.

4] Mattijssen, E., et al. Implementing context information management in forensic casework: Minimizing contextual bias in firearms examination. *Science and Justice,* 2015, vol. 56, pp. 113-112.

[b] https://webstore.ansi.org/Standards/ISO/ISOIEC170252017?gclid=CjwKCAiAq8f-BRBtEiwAGr3DgWtP9pEhus58lh6Rt_prKfCb2c_30lgmyAgPfjk7knTDyBjF8aX-xhoC6xYQAvD_BwE

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