Best Practice Recommendation for Verification in Friction Ridge Examination

Friction Ridge Subcommittee
Physics/Pattern Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science

OSAC Proposed BPR

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Prepared by
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Organization of Scientific Area Committees (OSAC) for Forensic Science

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Disclaimer:

This document has been developed by the Friction Ridge Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science through a consensus process and *proposed* for further development through a Standard Developing Organization (SDO). This document is being made available so that the forensic science community and interested parties can consider the recommendations of the OSAC pertaining to applicable forensic science practices. The document was developed with input from experts in a broad array of forensic science disciplines as well as scientific research, measurement science, statistics, law, and policy.

This document has not been published by a SDO. Its contents are subject to change during the standards development process. All stakeholder groups or individuals are strongly encouraged to submit comments on this proposed document during the open comment period administered by the Academy Standards Board (ASB).

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1. Introduction

1.1. This document has been developed with the objective of improving the quality and consistency of friction ridge examination practices.

1.2. The final phase of friction ridge examination Verification. A second examiner will review the friction ridge impressions to determine if the original examiner's conclusions are supported by the data in the impressions. This document provides recommendations and guidance for this important quality control measure.

1.3. In this document, the following verbal forms are used: "*shall*" indicates a requirement, "*should*" indicates a recommendation; "*may*" indicates permission; and "*can*" indicates a possibility or capability.

2. Scope

2.1. This document describes best practice recommendations for how to conduct the Verification phase during friction ridge impression examinations. These recommendations apply to both suitability determinations and resulting conclusions. The following topics will be addressed:

2.1.1. Verification considerations (e.g. extent, utility, case type, approach)

2.1.2. Types of verification and application options

2.1.3. Documentation

2.2. This document does not address technical review.

3. Terms and Definitions

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

3.1. Blind verification: A type of verification in which the subsequent examiner(s) has no knowledge of the original examiner's decisions, conclusions or observed data used to support the conclusion.

3.2. Consensus opinion: A type of examination in which a reported decision or conclusion is determined that reflects the collective judgment (e.g. majority) of a group of examiners.

3.3. Forensic Service Provider (FSP): A forensic science entity or forensic science practitioner providing forensic science services.

3.4. Nonconforming work: Work that does not comply with FSP policies and procedures.

3.5. Open (non-blind) verification: A type of verification in which the subsequent examiner has access to the original examiner's decisions, conclusions or observed data used to support the conclusion.

3.6. Quality assurance measures: Steps taken by an FSP to detect and correct nonconforming work. This may include, but is not limited to, root cause analysis, additional verification, non-conformity assessment, audits and corrective and/or preventative actions.

3.7. Suitability for Comparison Decision (Suitability for Source Conclusions): A decision made by an examiner in accordance with FSP policy and/or procedure, that a friction ridge impression contains sufficient observed data to be utilized for comparison and a Source Conclusion can potentially be reached. This designation is often referred to as "suitable for comparison" or "of value for comparison".

3.8. Technical review: A qualified second party's evaluation of reports, notes, data, and other documentation to ensure there is appropriate and sufficient support for the actions, results, conclusions, opinions and interpretations.

3.9. Verification: Confirmation, through either re-examination or review of documented data by another examiner, that a conclusion or opinion conforms to specified requirements and is reproducible. NOTE: "Specified requirements" are the FSP's policies and procedures relating to Analysis, Comparison and Evaluation of friction ridge impressions.

4. General Recommendations

4.1. Verification is a quality control measure, and should include the independent examination of one or more friction ridge impressions, by another examiner, to evaluate a conclusion or opinion.

4.2. Verification should apply to all decisions including utility (e.g. suitability determinations) and examination conclusions. At a minimum, verification shall apply to Source Identification, Support for Same Source and Source Exclusion conclusions.[1]

4.3. FSPs may choose to verify suitability determinations before the Comparison phase of the ACE process continues.

4.4. The decision to use a method other than open (non-blind) verification may be based on case circumstances and/or case type (e.g. person vs. property crime; high profile; complex comparisons).

4.5. FSPs should conduct enhanced verification (i.e. blind, multiple, etc.) when a single 'Source Identification' or 'Support for Same Source' conclusion has been drawn to a

[1] This is not intended to include all individual candidates generated as a result of a database search (e.g. ABIS).

particular individual after an AFIS search. This is due to the greater risk of error in these types of cases.

4.6. There are different types of verification available. There have been no studies on whether open or blind verification is more likely to detect errors in latent print examinations, but the broader scientific community suggests that blind verification is a better way to assess consistency (reliability) across examiners and believed to be more likely to detect errors. FSPs should balance any advantage of blind verification (for quality control purposes) against the additional time it may require. Therefore, the type of verification used should be determined by the FSP in accordance with their quality assurance measures and stated in the case documentation. These types include, but may not be limited to:

4.6.1. Blind verification: A type of verification in which the subsequent examiner(s) has no knowledge of the original examiner's decisions, conclusions or observed data used to support the conclusion – at the time the examiner is conducting the blind verification. (Note: Access to these data and conclusions may occur once the blind verification is completed and documented, e.g. sequential unmasking.) Blind verification should involve a completely independent reapplication and documentation of ACE by the subsequent examiner(s). FSPs should have a policy defining the circumstances in which blind verification will be required. At a minimum, blind verification should be used in the following scenarios.

4.6.1.1. Single-identification (or 'support for same source') ABIS searches to a particular individual

4.6.1.2. High-profile cases (due to greater potential for bias)

4.6.1.3. Simultaneity identification based on aggregate (no single impression stands alone for identification)

4.6.1.4. Complex impressions or comparisons (low quality, high ambiguity, distortion, etc. as defined by FSP policy)

4.6.1.5. Verifier discretion (first examiner concludes 'inconclusive' or 'support for same source', verifier concludes 'identification', third examination may be blind to mitigate bias)

4.6.2. Open (non-blind) verification: A type of verification in which the subsequent examiner has access to the original examiner's decisions, conclusions or observed data used to support the conclusion. Open verification should also involve an independent reapplication and documentation of ACE; however, the subsequent examiner (s) may review the documented observations produced by the original examiner. Open verification may be used when none of the suggested criteria stated for blind verification are present.

4.7. Consensus opinion is an additional quality control measure. It is a type of examination in which a reported decision or conclusion is determined that reflects the collective judgment (e.g. majority) of a group of examiners. This is achieved through independent examination (open or blind) by multiple examiners and subsequent discussion/determination. FSPs should have a policy defining the circumstances in which consensus opinion will be required. At a minimum, consensus opinion shall be used in the following scenarios.

4.7.1. Conflicting (opposing) conclusions

4.7.2. Complex comparisons (low quality, high ambiguity, distortion)

4.8. Current research has demonstrated that erroneous exclusions are the most commonly observed error. Verification is a vital process for helping mitigate this error. Closed database searching ("case AFIS") can be an effective verification tool when specific persons of interest are provided for comparison. A database of only these persons is created and then the questioned impressions are searched using AFIS algorithms against this closed database. This may be useful as an additional quality control measure when either Source Exclusion or Support for Different Source conclusions have been drawn.

4.9. Contemporaneous documentation of the verification shall be included in the case record. This documentation should be commensurate with the complexity level of the examination (e.g. more complex comparisons will require more extensive documentation).

4.10. The FSP shall have a policy to address non-conforming work.

4.11. The FSP shall have a policy to address conflicting analysis (suitability, search parameters) decisions and conflicting examination conclusions.

5. Procedural Recommendations

5.1. Determine if the verification will be open or blind.

5.1.1. If open, then the verifier will receive the original examination documentation and conclusion.

5.1.2. If blind, then the verifier should only receive unmarked and un-enhanced (e.g. digitally processed) images of the questioned and exemplar impressions.

5.2. For open verification, the verifier should conduct and document an independent ACE prior to reviewing the data originally used to support the reported conclusion (e.g. image annotations, bench notes)[2]. The verifier should ensure that the data are carefully weighed

[2] The OSAC FRS recognizes that some FSPs allow the verifier to reference the documented observations produced by the original examiner without conducting an independent ACE. FSPs that utilize this approach must be sensitive to confirmation bias.

under both propositions (same or different sources), being mindful that consideration of only one proposition can lead to confirmation bias error.

5.3. For blind verification, the verifier will: Conduct and document an independent ACE on two or more unmarked friction ridge impressions (e.g. questioned and exemplar):

5.3.1. Analyze the questioned impression to determine suitability and will annotate the features used to support this decision according to FSP policy. If the impression is suitable for source conclusions, then the verifier will ensure that the exemplar is properly recorded for comparison.

5.3.2. Proceed with the comparison and document potential correspondence or non-correspondence between the impressions according to FSP policy.

5.3.3. Assess the significance of the correspondence or non-correspondence in the evaluation phase, after which the examiner will record a conclusion.

5.4. After either open or blind verification, it is necessary to determine if the examiner and verifier support the same conclusion. If so, then the verification is complete. If support for the same conclusion is lacking, then the examiner and verifier shall enter into conflict resolution procedure.

6. Appendix A: Change Log

Version	Date	Change
1.0	9/6/2019	Original Issue