

# **OSAC PROPOSED STANDARD**

## **2023-S-0028**

# **Best Practice Recommendations**

## **for the Resolution of Conflicts in**

## **Toolmark Value Determinations**

## **and Source Conclusions**

Firearms & Toolmarks Subcommittee  
Physics/Pattern Interpretation Scientific Area Committee (SAC)  
Organization of Scientific Area Committees (OSAC) for Forensic Science



## OSAC Proposed Standard

**OSAC 2023-S-0028**

# Best Practice Recommendations for the Resolution of Conflicts in Toolmark Value Determinations and Source Conclusions

Prepared by  
Firearms & Toolmarks Subcommittee  
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Version No.	Issue Date	Section	Reason
2.0	May 7, 2024	--	Added to the OSAC Registry and publicly announced.
2.1	January 23, 2025	4.3.1	Removed text (ethanol concentration for relevant samples) from paragraph 3.
2.2	January 7, 2026	3	Corrected term 3.1. BLIND VALIDATION to BLIND VERIFICATION

## Foreword

This document has been developed with the objective of providing best practice recommendations for resolving conflicts with toolmark value determinations or source conclusions that arise during the Forensic Science Service Provider's (FSSP's) quality assurance process. The potential for differing value determinations or source conclusions is possible given the subjective nature of toolmark comparisons, particularly for those toolmarks where the quantity and quality of observed data are low and require a greater level of interpretation.

An examiner should be aware of and have access to clear procedures for resolving a conflict. Under no circumstances shall any examiner be forced or coerced into agreeing with or writing a technical report in support of a source conclusion with which they do not agree. Additionally, FSSP management should have processes in place to track the causes and frequency of conflicts between examiners. The types, root causes, and frequency of conflicts may illuminate the need for supplemental training, additional mentoring, policy and procedure updates, or enhanced monitoring of case work.

The draft of this standard was developed by the Firearms and Toolmarks Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

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## **Best Practice Recommendations for the Resolution of Conflicts in Toolmark Value Determinations and Source Conclusions**

### **1 Scope**

**1.1** This document describes the best practice recommendations for resolving conflicts with toolmark value determinations or source conclusions that may arise between examiners at any point during the verification process. Throughout this document, the term “toolmark” is used to refer to both firearm-produced and non-firearm-produced toolmarks. This document specifies and provides examples for addressing the following:

**1.1.1** Conflicting value determinations

**1.1.2** Conflicting source conclusions

**1.1.3** Documentation and reporting of conflict resolution

**1.2** This document does not address differences of opinion that occur during a consultation, nor any organizational response once an error is discovered or conflict(s) are resolved.

### **2 Normative References**

There are no normative reference documents.

### **3 Terms and Definitions**

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

#### **3.1**

##### **blind verification**

A verification of source conclusions where the verifier is shielded from the decisions, conclusions, and documented data of the previous examiner(s).

#### **3.2**

##### **conflict**

A situation in which, after deliberation, two or more examiners disagree on a value determination or source conclusion.

#### **3.3**

##### **consultation**

A discussion between the primary examiner and another qualified examiner for the purposes of providing guidance/opinion(s)/advice to the primary examiner pertaining to a source conclusion. This occurs prior to the source conclusion being reached by the primary examiner.

### **3.4**

#### **deliberation**

Discussion and consideration between the primary examiner and verifier to determine if a value determination or source conclusion can be agreed upon.

### **3.5**

#### **forensic science service provider (FSSP)**

An organization or individual that provides forensic science services.

### **3.6**

#### **FSSP management**

Those designated by the FSSP with the authority and technical expertise to address and make decisions about conflict resolution matters. Depending on the FSSP, this may include a technical leader, supervisor, quality manager, etc.

### **3.7**

#### **observed data**

Information observed within a toolmark that an examiner relies upon to reach a decision, conclusion, or opinion. This type of information is commonly expressed as “striae”, “toolmarks”, “marks of value”, “class characteristics”, “subclass characteristics”, or “individual characteristics”, but the use of the broader term “observed data” is inclusive of other types of data that may be considered, such as reproducibility and range of variability of toolmark features among a series of marks.

### **3.8**

#### **primary examiner**

The firearm and toolmark examiner responsible for conducting a toolmark examination, reaching source conclusions, and authoring a report.

### **3.9**

#### **source conclusions**

Findings or statements expressed as opinion(s) and made by an examiner after interpretation of observed data regarding the source of a toolmark.

### **3.10**

#### **value determination (suitability for comparison decision)**

A decision made by an examiner in accordance with FSSP policy or procedure as to whether or not a questioned item has sufficient features for comparison and a source conclusion can potentially be reached.

### **3.11**

#### **verifier**

The firearm and toolmark examiner tasked with reaching independent opinions or source conclusions regarding evidence previously examined by the primary examiner.

### **3.12**

#### **verification**

An independent comparison or analysis of items previously examined by the primary examiner to provide a quality check of value determinations or source conclusions.

### **4 General Requirements/Recommendations**

**4.1** The primary examiner and the verifier should attempt to resolve any differing value determinations or source conclusions via deliberation. If consensus is reached, the deliberation process concludes. The original conclusions of both parties, the deliberation, and the outcome shall be documented in the case record. If agreement is not achieved, the conflict resolution process begins and the following actions should be taken:

**4.1.1** A conflicting value determination should be resolved by treating the item in question as if it has value and proceeding with comparison.

**4.1.2** A conflicting source conclusion should be forwarded to FSSP management to implement the most appropriate and available option(s) to resolve the conflict.

**4.1.3** Care should be taken to ensure that the FSSP management is free from outside influences or internal biases.

**4.2** FSSP management may consider the following options to resolve the conflict:

**4.2.1** Examination by a Third Examiner:

**4.2.1.1** A third examiner (who may be a bench-level examiner, technical leader, technical supervisor/manager, or an examiner external to the FSSP) should perform a blind comparison (i.e., shielded from the decisions, conclusions, and documented data of the other two examiners) of the toolmarks in question and document their own source conclusion. The third examiner should not be permitted to discuss the case with the primary examiner or verifier until after the conclusions of the third examiner have been documented. Whenever practicable, neither the primary examiner nor the verifier should be the person who chooses or assigns the third examiner.

**4.2.1.2** The source conclusions and decision-making processes of the primary examiner, verifier, and third examiner should be evaluated by FSSP management. FSSP management should then determine how to proceed in consideration of all available information.

**4.2.2** Formation of a Scientific Review Panel:

**4.2.2.1** FSSP management shall define the roles, responsibilities, and procedures to be followed prior to formation of the scientific review panel. The FSSP shall then select appropriate subject matter experts (SMEs) to serve on the panel. SMEs from external organizations may be used. If an SME is being tasked with conducting their own examination of the evidence to reach a source conclusion, they should not have knowledge of the previous conclusions until they have

documented their own conclusion. Once their conclusion is documented, the SMEs should be permitted to discuss the case with the primary examiner, verifier, third examiner, and/or other SMEs. FSSP management should then determine how to proceed in consideration of all available information.

**4.3** Possible outcomes include, but are not limited to, the following:

**4.3.1** If FSSP management determines that the primary examiner's conclusion is appropriate, the primary examiner may retain the case and author a report.

**4.3.2** If FSSP management determines that the verifier's conclusion is appropriate, the case may be reassigned to the verifier, who will then act as the reporting examiner. The scope of reanalysis and reporting will be determined by the FSSP's policies and procedures.

Under no circumstances shall any examiner be required to report a source conclusion with which they do not agree.

**4.4** It is recognized that more than one conflict regarding a value determination or source conclusion could arise within the same case. If this occurs, each conflict should be addressed using the conflict resolution process.

**4.5** FSSPs should have clear, written policies in place for the implementation of this procedure.

**4.5.1** The FSSP shall retain records of the qualifications and evaluation of any third-party examiner or reviewer (e.g., technical reviewer, SME for Scientific Review Panel) who is external to the FSSP.

**4.5.2** FSSPs should establish requirements for notifications to FSSP management regarding conflicts between examiners.

**4.6** Quality Assurance

**4.6.1** The FSSP should determine the quality assurance measures to be taken as a result of the conflicting value determinations or source conclusions (e.g., root cause analysis, corrective action).

**4.7** Documentation and Reporting

**4.7.1** Although the level of documentation needed for conflict resolution may vary according to the nature of the conflict and FSSP policy, the following shall be documented in the case record for all conflict resolutions:

**4.7.1.1** The process and outcome of the conflict resolution.

**4.7.1.2** Data (e.g., written notes, images) to support value determinations and source conclusions reached in the conflict resolution process, to include the reasons for the final decision(s).

**4.7.1.3** Personal identifier(s), role(s), and date(s) of involvement of all parties (e.g., examiner, quality manager, supervisor, laboratory director) to the conflict resolution.

**4.7.1.4** All documentation generated by any involved party, including all value determinations or source conclusions that were reached prior to beginning the conflict resolution process, shall be retained.

**4.7.2** FSSPs shall state in the final report that a conflict resolution process was utilized to reach the conclusion(s).

**4.7.2.1** If a conclusion cannot be agreed upon by FSSP management at the end of the conflict resolution process, the report shall also state that a consensus source conclusion could not be reached.

**4.7.3** FSSPs should consult legal counsel to ensure compliance with all disclosure obligations regarding conflict resolution.