

# **OSAC 2023-S-0028**

## **Best Practice**

### **Recommendations for the**

#### **Resolution of Conflicts in**

##### **Toolmark Value**

###### **Determinations and Source**

###### **Conclusions**

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



## DRAFT 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*  
*Organization of Scientific Area Committees (OSAC) for Forensic Science*

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### Disclaimer

This OSAC Proposed Standard was written by the Organization of Scientific Area Committees (OSAC) for Forensic Science following a process that includes an [open comment period](#). This Proposed Standard will be submitted to a standards developing organization and is subject to change.

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OSAC 2023-S-0028 Best Practice Recommendations  
for the Resolution of Conflicts in Toolmark  
Value Determinations and Source Conclusions

The STR panel will consist of an independent and diverse panel, including subject matter experts, human factors scientists, quality assurance personnel, and legal experts, which will be tasked with evaluating the proposed standard based on a comprehensive list of science-based criteria.

For more information about this important process, please visit our website at: <https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/scientific-technical-review-panels>

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## 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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1     **1. Scope**

2     1.1. This document describes the best practice recommendations for resolving conflicts with  
3     toolmark value determinations or source conclusions that may arise between examiners  
4     at any point during the verification process. Throughout this document, the term  
5     “toolmark” is used to refer to both firearm-produced and non-firearm-produced  
6     toolmarks. This document specifies and provides examples for addressing the following:

7  
8     1.1.1. Conflicting value determinations

9  
10    1.1.2. Conflicting source conclusions

11  
12    1.1.3. Documentation and reporting of conflict resolution

13  
14    1.2. This document does not address differences of opinion that occur during a  
15    consultation or any organizational response once an error is discovered or the  
16    conflict(s) are resolved.

17     **2. Normative References**

18  
19     There are no normative reference documents.

20     **3. Terms and Definitions**

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

22  
23     **3.1. Conflict**

24     A condition in which two or more examiners disagree on a value determination or source  
25     conclusion.

26  
27     **3.2. Consultation**

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

32  
33     **3.3. Forensic Science Services Provider (FSSP)**

34     A forensic science agency or forensic science practitioner providing forensic  
35     science services

36  
37     **3.4. FSSP Management**

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

41  
42     **3.5. Observed data**

43     Information observed within a toolmark that an examiner relies upon to reach a decision,  
44     conclusion, or opinion. This type of information is commonly expressed as “striae”,  
45     “toolmarks”, “marks of value”, “class characteristics”, or “individual/random  
46     characteristics”, but the use of the broader term “observed data” is inclusive of other types

47 of data that may be considered, such as reproducibility and range of variability of  
48 toolmark features among a series of marks.

49

50 **3.6. Primary examiner**

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

53

54 **3.7. Source conclusions**

55 Findings or statements expressed as opinion(s) and made by an examiner after  
56 interpretation of observed data. Refer to the scale of source conclusions for  
57 toolmark examinations.

58

59 **3.8. Value determination (suitability for comparison decision)**

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

63

64 **3.9. Verifier**

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

67

68 **3.10. Verification**

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

71

72 **4. General Requirements / Recommendations**

73

74 4.1. Conflict resolution may be needed when examiners disagree on a value determination or  
75 a source conclusion. It is recognized that cases often include numerous toolmark  
76 comparisons and could involve more than one conflict resolution process.

77

78 4.2. FSSPs should have policies in place which contain internal notification requirements  
79 (e.g., notification to the supervisor or quality manager) and processes to track the  
80 causes and frequency of conflicts between examiners.

81

82 4.3. A conflict may be resolved through a deliberation between the conflicting examiners,  
83 a subsequent blind examination by a third examiner, or some other process as  
84 determined by FSSP management.

85

86 4.3.1. Deliberation between the primary examiner and verifier: The primary examiner and  
87 the verifier should attempt to resolve the conflicting value determinations or source  
88 conclusions via deliberation. If agreement is achieved, the conflict resolution  
89 process concludes. If agreement is not achieved, the following actions should be  
90 taken:

91

92 4.3.1.1. A conflicting value determination should be resolved by treating the item in

question as if it has value and proceeding with comparison.

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

4.3.2. When the disagreement between two examiners cannot be resolved through deliberation between the primary examiner and verifier, the conflict should be elevated to FSSP management. FSSP management should determine the next course of action to resolve the conflict. Options may include the following:

4.3.2.1. Examination by a Third Examiner:

4.3.2.1.1. A third examiner (who may be a bench-level examiner, technical leader, technical supervisor/manager, or an examiner external to the FSSP) should compare the toolmarks in question and document their own source conclusion. This should be done blindly, i.e., the third examiner should be shielded from the decisions, conclusions, and documented data of the other two examiners. The third examiner should be permitted to discuss the case with the primary examiner and/or verifier, but only 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.

4.3.2.1.2. The three source conclusions (Those of the primary examiner, verifier, and third examiner) should be evaluated by FSSP management and an attempt should be made to determine the reason(s) for the conflict. FSSP management should then determine how to proceed in consideration of all available information. Possible options include, but are not limited to, the following:

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

4.3.2.1.2.2. 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 primary examiner and author a report.

4.3.2.2. Formation of a Scientific Review Panel:

4.3.2.2.1. 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. The SMEs should not have knowledge of the previous conclusions until they have documented their own conclusions, after which the SMEs should be permitted to discuss the case with the primary examiner, verifier, third examiner, and/or other SMEs.



- 142 4.4. Quality Assurance  
143  
144 4.4.1. The FSSP shall determine what quality assurance measures should be taken as a  
145 result of the conflicting value determinations or source conclusions (e.g., root  
146 cause analysis, corrective action).  
147
- 148 4.5. Documentation and Reporting  
149
- 150 4.5.1. The level of documentation needed for conflict resolution will vary according to the  
151 nature of the conflict and FSSP policy. For all conflict resolutions, the following  
152 shall be documented in the case record:  
153
- 154 4.5.1.1. The process and outcome of the conflict resolution.  
155
- 156 4.5.1.2. Written notes and/or images of the observed data to support the  
157 resolution, to include the reasons for the final decision(s).  
158
- 159 4.5.1.3. Personal identifier(s), role(s), and date(s) of involvement of all parties  
160 (e.g., examiner, quality manager, supervisor, laboratory director) to the  
161 conflict resolution.  
162
- 163 4.5.1.4. All documentation generated by any involved party shall be retained.  
164 This includes all value determinations or source conclusions that were  
165 reached prior to verification and ultimately changed.  
166
- 167 4.5.2. If a single conclusion cannot be agreed upon by FSSP management at the end  
168 of the conflict resolution process, the FSSP shall report all conclusions with an  
169 explanation that a conflict arose and could not be resolved.  
170
- 171 4.5.3. FSSPs should consult legal counsel regarding obligations pertaining to the  
172 disclosure of conflict resolution documentation and/or whether the conflict  
173 should be indicated in the report.