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Standard for Footwear/Tire Examination Proficiency Testing Program



DRAFT DOCUMENT

1. ISO/IEC 17043:2010 Conformity Assessment – General Requirements for Proficiency Testing
2. Proficiency Testing in Forensic Sciences, National Commission on Forensic Science, March 2016

Standard for Footwear/Tire Examination Proficiency Testing Program

1 Scope

- 1.1 Proficiency testing is the use of inter-laboratory comparisons for the determination of laboratory testing or measurement performance.¹ Proficiency testing is one mechanism through which the performance of an organization can be checked to confirm its ability to adhere to the organization's procedures.²
- 1.2 Proficiency testing is used not only as a measure of the Forensic Science Service Provider's (FSSP's) overall performance and quality system but also as a tool for monitoring an individual FSSP's continued ability to perform work in a specific discipline or tasks.²
- 1.3 A proficiency test program is intended to:
 - 1.3.1 Evaluate an individual examiner's ongoing application of a methodology and the agency's procedures.
 - 1.3.2 Ensure an individual FSSP arrives at appropriate conclusions given the evidence provided.
 - 1.3.3 Test the ability of a laboratory to adhere to national and internal standards.
- 1.4 The purpose of this document is to provide a standard for creating proficiency tests appropriate for use by a Footwear/Tire FSSP as well as recommendations for testing frequency. This document provides guidance to test developers, laboratory management and participants but is primarily concerned with the discipline level content and the FSSP's ability to perform work and not organizational compliance.
- 1.5 Only FSSPs who are competent to perform independent casework are to be proficiency tested.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- ASTM E2489-16, Standard Practice for Statistical Analysis of One-Sample and Two-Sample Interlaboratory Proficiency Testing Programs
- ISO/IEC 17043:2010 Conformity Assessment – General Requirements for Proficiency Testing
- SWGTREAD, Standard Terminology Used for Forensic Footwear and Tire Impression Evidence (03/2013)
- Standard Practice/Guide for Scope of work and minimum qualifications and training for a Footwear/Tire Forensic Science Service Provider
- NIST/OSAC, OSAC Lexicon, Lexicon.ForensicOSAC.org, accessed 4/12/2018
- Proficiency Testing in Forensic Sciences, National Commission on Forensic Science, March 2016
- SWGTREAD, Range of Conclusions Standard for Footwear and Tire Impression Examinations (03/2013)

3 Terms and Definitions

1. ISO/IEC 17043:2010 Conformity Assessment – General Requirements for Proficiency Testing
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3.1 Competency Testing – the demonstration that a FSSP has acquired and demonstrated specialized knowledge, skills, and abilities in the standard practices necessary to conduct examinations in a discipline and/or category of testing prior to performing independent casework.²

3.2 External Source – A commercial producer of a proficiency test that is accredited to ISO/IEC 17043:2010.

3.3 Internal Source – A non-commercial producer of a proficiency test. This source may be the FSSPs own lab/employer or another non-commercial source.

3.4 Consultation – A significant interaction, prior to the initiation of the technical review or verification process, between the reporting analyst and another analyst that results in a consensus opinion or a jointly-developed conclusion that would not have been reached by the reporting analyst alone.

4 Program Plan

A FSSP shall write a plan to encompass the testing program. At a minimum, a proficiency testing program plan shall include the following:

4.1 Frequency of testing

A footwear/tire FSSP is recommended to complete at least one footwear/tire proficiency test (internal or external) each year.

4.2 Knowledge, skills, abilities to be tested

The proficiency test should reflect the knowledge, skills, and abilities necessary to fulfill the requirements of the FSSP's job in relation to footwear /tire evidence. These areas may include but are not limited to:

- Recovery
- Chemical enhancement
- Imaging
- Analysis of questioned impression
- Make/model searches
- Digital processing
- The making of test impressions
- Analysis of known test impressions and known item
- Note taking
- Comparison methodology
- Evaluation of findings
- Conclusions and levels of association/non-association
- Report writing

In addition to these areas, it is recommended the FSSP evaluate adherence to FSSP procedures relating to documentation, technical review, evidence handling, and related administrative actions.

4.3 Test design

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4.3.1 Tests should be designed to sample some of the conditions listed in 4.3.1.1-

4.3.1.3

4.3.3.1 Tests should include multiple recovery/processing techniques.

4.3.3.2 Tests should be inclusive of all the levels of association/non-association.

4.3.3.3 Tests should include questioned impressions from different sources that bear resemblances to the known items.

4.3.2 The ground truth of the test should be known

4.3.3 Test reporting format shall include the range of conclusions that are supported by the conclusions document in the normative references.

4.4 Test materials

All participants shall have materials of the same quality. Test materials shall be representative of casework and

4.4.1. Include multiple questioned impressions (representing the types and quality of impressions seen in casework) and known samples (physical items – footwear or tires are preferable to photographs and test impressions).

4.4.2 Supporting task-relevant information may be provided to or requested by the participant that may include but is not limited to:

- Scene information
- Substrate information
- Recovery information
- Matrix information
- Date of recovery
- Date of seizure of known item

4.5 Test format

The test format will be at the discretion of the FSSP, noting that a test that is administered blind to both the FSSP and employer is the most robust in testing the entire system.

Tests shall be administered in one or more of the following formats:

4.5.1 Open

In open testing, FSSPs are aware they are being tested.

4.5.2 Blind

In blind testing, FSSPs or FSSPs and employer are not aware they are being tested.

4.6 Test source

Tests may be developed internally or obtained from an external source.

4.7 Test administration

4.7.1 The FSSP and proficiency test provider should make every effort to avoid redundancy of the subject matter being tested in consecutive tests so that a known pattern cannot be inferred from the test design.

4.7.2 The FSSP should ensure FSSPs apply established procedures while performing the analysis and independent conclusions are produced as appropriate to a test's purposes. If the purpose of the test includes testing the FSSP procedures, then technical review would be appropriate.

4.7.3 Undue time constraints should not be imposed.

4.7.4 In open proficiency tests all conclusions shall be those of the FSSP without consultation.

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4.7.5 Verification and technical review is permitted and shall be documented.

4.7.6 Test location and conditions should reflect a normal working environment.

4.8 Test validation

4.8.1 External proficiency tests

Validation shall occur by pre-distribution to three or more certified footwear and/or experienced tire FSSPs. The range of acceptable conclusions shall be determined by analysis of the pre-distribution results. The test shall be validated to ISO 17043 standards.

4.8.2 Internal proficiency tests

Documentation from the preparer should demonstrate that the test can be successfully completed. Tests should only be prepared by an experienced footwear/tire FSSP. The preparing FSSP(s) will define the range of acceptable conclusions.

4.9 Test Evaluation

The FSSP should identify a footwear/tire FSSP to evaluate the proficiency test results. If an evaluator is not available within the agency, it is recommended an agreement is entered into with another agency for evaluation.

4.9.1 The evaluator should take into consideration the following:

- The design and construction of the test
- The expected results
- The range of acceptable conclusions
- The limitations of the comparison
- The ground truth of the test

4.9.2 If an inconsistency is identified then the evaluator shall determine the level of the inconsistency. The agency should have criteria in place for the categorization of the levels of inconsistency based on the effect on the quality of the work product. An example of the levels of inconsistencies may be categorized as follows:

Class I

The nature and cause of the inconsistency raises immediate concerns regarding the quality of the analyst's/agency's work product

Class II

The inconsistency is due to a problem which may affect the quality of the work, but is not serious enough to cause immediate concern for the overall quality of the analyst's/agency's work product

Class III

The inconsistency is determined to have only minimal effect or significance, be unlikely to recur, is not systemic, and does not significantly affect the fundamental reliability of the analyst's/agency's work

4.10 Corrective actions

The agency shall have corrective action procedures in place that are appropriate for the levels of inconsistencies categorized above

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4.10.1 A Class I inconsistency may involve the removal of the analyst from casework, review of the analyst's case files, remedial training and the successful completion of a competency test

4.10.2 A Class II inconsistency may involve remedial training

4.10.3 A Class III inconsistency may involve reiteration of the agency's administrative procedures with the analyst

4.10.4 If more than one analyst fails to technically perform one specific aspect of a proficiency test correctly the whole discipline may choose to undergo specific remedial training in this area.

4.11 Criteria for successful completion

Criteria for successful completion shall be defined in the program plan. A successful proficiency test should have:

4.11.1 Conclusions that fall within the acceptable range of conclusions defined by the preparing FSSPs

4.11.2 A measure of internal consistency (the FSSP's documented findings/notes should agree with the derived conclusion).

4.12 Feedback of the test results to the FSSP

The FSSP should have in place a procedure which ensures the outcome of the proficiency test is conveyed to the participant and any other relevant individuals

4.13 Documentation

The FSSP shall have procedures in place to retain all documentation related to the proficiency test.

5 Tables

6 Figures

7 Annexes

8 Bibliography

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