Standards Development Activities Related to Friction Ridge Examination

OSAC and ASB Progress Update and Q&A

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International Association for Identification (IAI)
Omaha, NE
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Disclaimer

The opinions or assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the National Institute of Standards and Technology (NIST) or the Organization of Scientific Area Committees (OSAC).

OSAC and Standards Development

- OSAC was established in 2014 to replace SWGs and is administered by the National Institute of Standards and Technology (NIST).
- ASB was established in 2015 to be an ANSI-accredited Standards Development Organization (SDO) and is administered by the AAFS.
- Both organizations work together to facilitate the promote the development and implementation of standards and best practice recommendations relating to friction ridge examination and have a balance of stakeholder representation and public involvement.

OSAC Structure

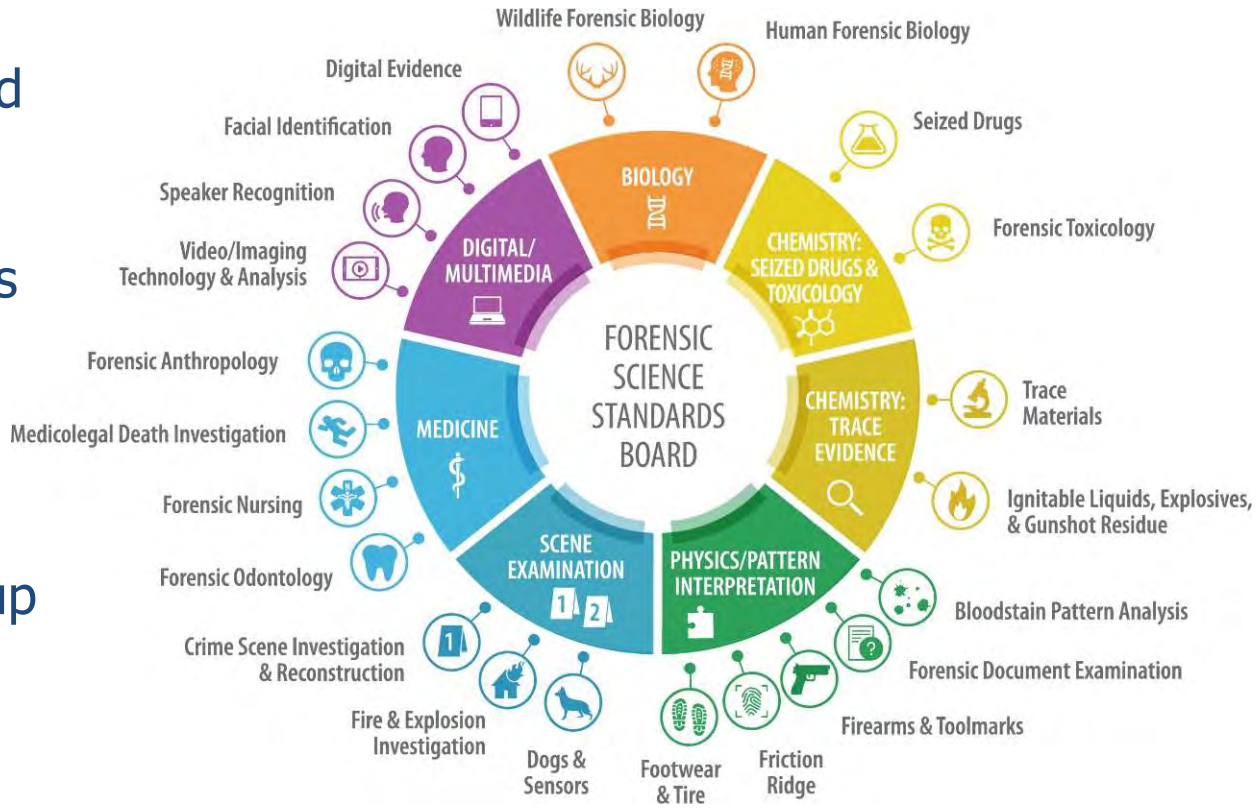
Forensic Science Standards Board (FSSB)

Seven Scientific Area Committees (SACs)

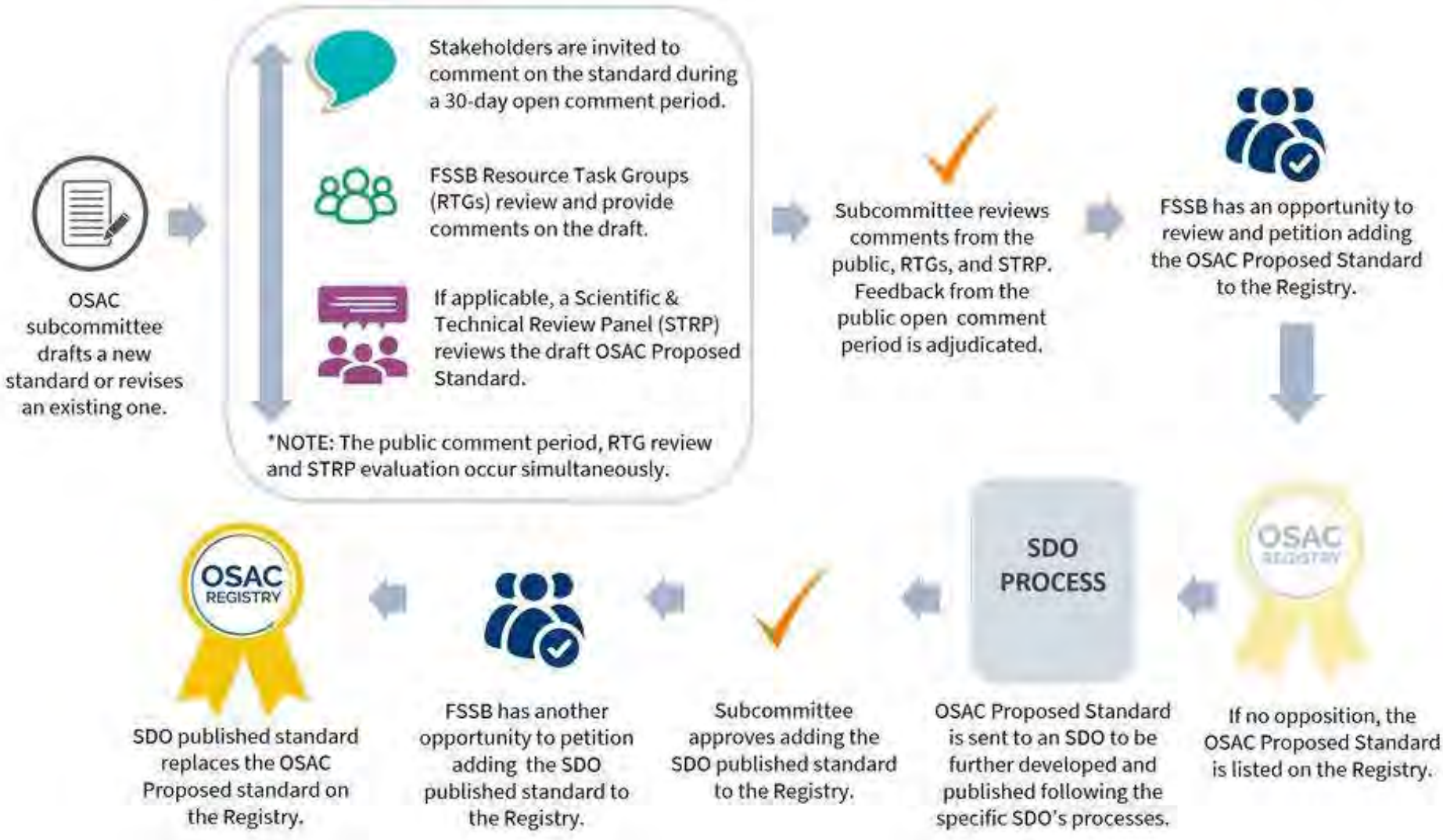
22 Subcommittees (SCs)

FSSB Task Groups (these make up STRPs):

- Quality
- Statistics
- Human factors
- Legal
- Terminology



OSAC and Standards Development



Strategic Priorities

Documents Under Development

1. Automated Biometric Identification System Best Practices
2. Method Validation (Standard and BPR)
3. Feature Selection
4. Recruiting/Selection for Pattern Recognition
5. Processing/Development of Friction Ridge Impressions
6. Task Relevance Information
7. Case Acceptance Criteria
8. *Process Map Update
9. *OSAC Implementation Guides
10. *R&D Needs Assessments

**Supplemental guides; not resulting in a standard or best practice recommendation document*

Published Proposed Standards & BPRs

1. Std for Proficiency Testing in Friction Ridge Examination
2. BPR for Limited Examinations
3. Std for Examining Friction Ridge Impressions
4. BPR for Analysis of Friction Ridge Impressions
5. BPR for Comparison and Evaluation of Friction Ridge Impressions
6. BP
7. BP nation
8. St
9. St
10. BP
11. BPR for the Resolution of Conflicts in the Course of Friction Ridge Examination
12. BPR for the Verification Component in Friction Ridge Examination
13. Std for Reporting Results from Friction Ridge Examinations
14. Std for Consultation During Friction Ridge Examination

"All published documents are completed work products of the OSAC Friction Ridge Subcommittee and have passed a rigorous technical and quality review by the subcommittee. The subcommittee encourages the forensic science community to implement these proposed standards."

ASB and Standards Development

- New Work Proposal received
- ASB Board review/approval
- Working Group formed to review/draft document
- WG document presented to Consensus Body for review/comment/vote
- Document goes to Public Comment
- Comments adjudicated
- Additional rounds of comment on any changes made, if necessary
- Final approval by Consensus Body
- ANSI Process Review
- Document returns to OSAC to be considered for placement on OSAC Registry

Documents Under Development at ASB

Number	Topic	WG Chair	Current status
BPR 142	Conflict Res.	Simon Cole	To ASB BoD to approve for publication
BPR 144	Verification	Pete	To ASB BoD to approve for publication
Std 145	Consultation	Vacant	2nd round of public comments completed and comment resolutions approved by CB. Going to 3rd round of PC.
Std 168	Mon. Testimony	Melissa	1st round of public comments completed and comment resolutions approved by CB. Going to 2nd round of PC.
BPR 165	Analysis	Pete Peterson	1st round of public comment completed and comment resolutions approved by CB. Going to 2nd round of PC.
BPR 166	C/E	Steve Johnson	1st round of public comments completed and comment resolutions approved by CB. Going to 2nd round of PC.
TR 016	Terminology	Steve Brock	1st round of public comment ended 4/25/2022. WG has 148 comments to resolve
Std 015	Examination	Melissa	1st round of public comment ended June 6, 2022. WG to resolve comments.
Std 167	Reporting Results	John Splain	1st round of public comment ended June 6, 2022. WG to resolve comments.
BPR 143	Tech Review	Melissa	1st round of public comment ended June 6, 2022. WG to resolve comments.
Std 013	Conclusions	Simon	3rd round of public comments closed July 11, 2022. WG to resolve comments
Std 014	Training	Alison Rees	1st round of public comments ended. CB to vote on 171 comment resolutions.
BPR 012	Articulation	Pete Peterson	CB has decided to continue work on this document. Old comments need adjudication.
NWP 014	Limited Exams	Brianne Breedlove	ASB BoD approved NWP, but comments must be addressed. WG forming.

Published Proposed Standards & BPRs

1. Std for Proficiency Testing in Friction Ridge Examination
2. BPR for Limited Examinations
3. Std for Examining Friction Ridge Impressions
4. BPR for Analysis of Friction Ridge Impressions
5. BPR for Comparison and Evaluation of Friction Ridge Impressions
6. BPR for Testimony Monitoring
7. BPR for Articulating a Source Identification in Friction Ridge Examination
8. Std for Friction Ridge Examination Conclusions
9. Std for Friction Ridge Examination Training Program
10. BPR for Technical Review in Friction Ridge Identification
11. BPR for the Resolution of Conflicts in the Course of Friction Ridge Examination
12. BPR for the Verification Component in Friction Ridge Examination
13. Std for Reporting Results from Friction Ridge Examinations
14. Std for Consultation During Friction Ridge Examination

OSAC FRS Proposed Examination Trio

S Proposed Examination Trio

Defines minimum requirements for FSP policies & procedures (i.e., *what* shall be accounted for)

Standard for Examining Friction Ridge Impressions

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

OSAC
Organization of Scientific Area Committees for Forensic Science

Best Practice Recommendation for Analysis of Friction Ridge Impressions

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

OSAC
Organization of Scientific Area Committees for Forensic Science

Best Practice Recommendation for Comparison and Evaluation of Friction Ridge Impressions

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

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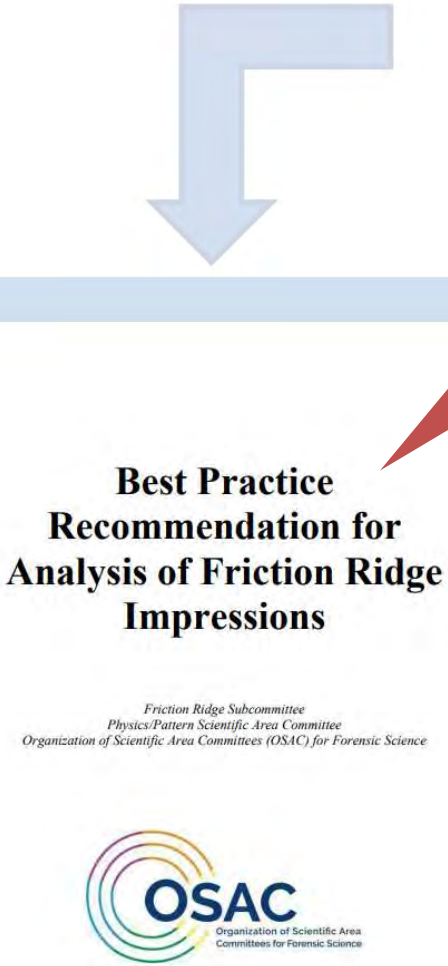
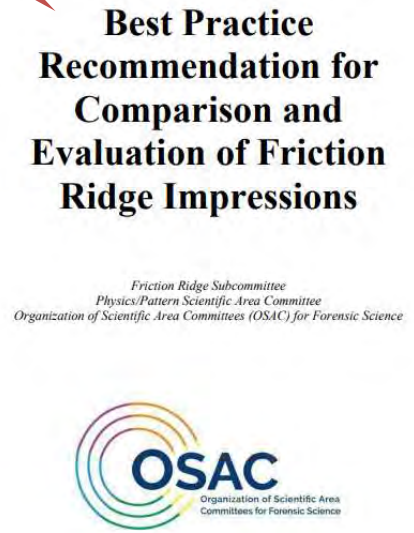
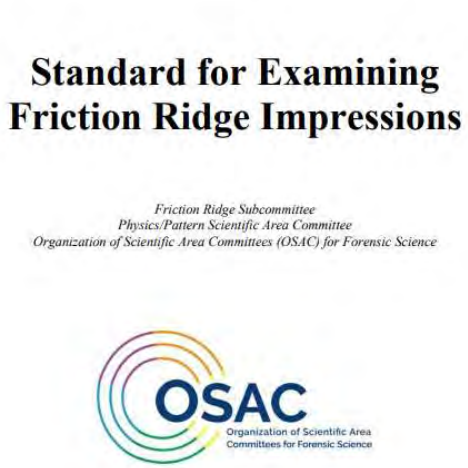
OSAC FRS Proposed Examination Trio

Defines recommendations for FSP policies & procedures (i.e., *how* it should be done)





OSAC FRS Proposed Std for Examination



The FSP *shall* . . .

- Define features that may be used for examination
- Define criteria for utility decisions and source conclusions
- Define criteria for designating impressions as "complex"
- Document observed data (i.e., features + quality) necessary to support source conclusions.
- Routinely monitor examiners' performance related to detection, documentation, and interpretation.

OSAC FRS Proposed BPR for Analysis

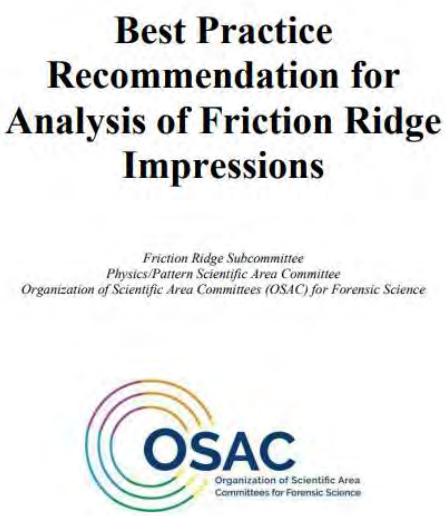
Criteria for Quality Designation*

Category 5	All Observed Data are definitive
Category 4	Definitive ridge edges; debatable pores
Category 3	Definitive minutiae; debatable ridge edges
Category 2	Definitive ridge flow; debatable minutiae
Category 1	Debatable ridge flow
Category 0	Background

*may be determined subjectively or through automated quality software

OSAC FRS Proposed BPR for Analysis

Criteria for *Impression* Complexity Designation



Non-Complex Impression:

- Greater than 15 minutiae designated as Category 3 (green) quality or higher; or at least 12 minutiae designated as Category 4 (blue) quality or higher.
- The observed data provides strong indication of the anatomical region and orientation

Low-Complexity Impression:

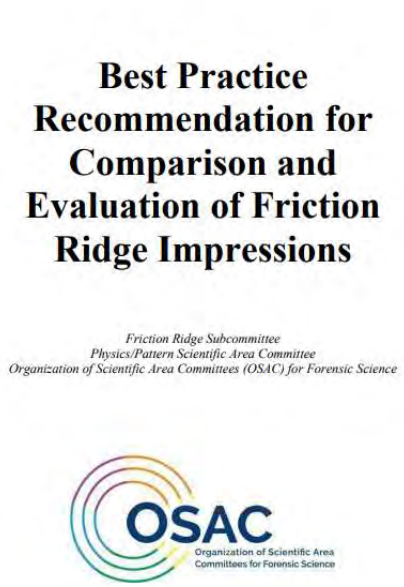
- Between 8 and 15 minutiae designated as Category 3 (green) quality or higher; or between 5 and 12 minutiae designated as Category 4 (blue) quality or higher.
- The observed data does not provide a strong indication of the anatomical region and orientation

High-Complexity Impression:

- Fewer than 8 minutiae designated as Category 3 (green) quality or higher; or fewer than 5 minutiae designated as Category 4 (blue) quality or higher.

OSAC FRS Proposed BPR for Comparison & Evaluation

Criteria for *Comparison* Complexity Designation



Three Categories:

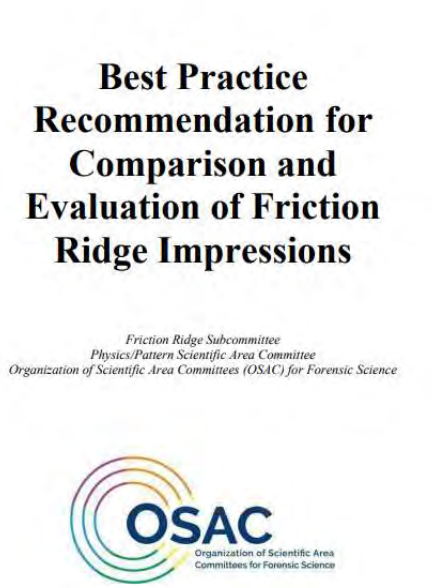
- Non-Complex Comparison
- Low-Complexity Comparison
- High-Complexity Comparison

Criteria accounts for:

- The complexity designation for each impression
- Whether the Observed Data provide strong indications of anatomical region
- Whether the Observed Data provide strong indications of orientation
- Whether the Observed Data in overlapping regions of impressions are designated as Category 3 (green) quality or higher
- Any differences in feature interpretations after exposure to the exemplar impression.

OSAC FRS Proposed BPR for Comparison & Evaluation

Criteria for Source Conclusions



Source Identification:

- Observed Data in relevant areas of both impressions are present and designated as Category 2 (yellow) quality or higher during Analysis
- Observed Data between the impressions correspond
- The corresponding data include at least 8 minutiae designated as Category 3 (green) quality or higher and documented during Analysis.

Source Exclusion:

- Observed Data in relevant areas of both impressions are present and designated as Category 2 (yellow) quality or higher during Analysis
- Observed Data between the impressions do not correspond.

OSAC FRS Proposed Std for Conclusions

Standard for Friction Ridge Examination Conclusions

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

OSAC
Organization of Scientific Area Committees for Forensic Science

5 allowable (*not required) conclusions

1. **Source Exclusion** is the conclusion that two friction ridge impressions did not originate from the same source.

2. ***Support for Different Sources** is the conclusion that the observations provide more support for the proposition that the impressions originated from different sources rather than the same source; however, there is insufficient support for a Source Exclusion. The degree of support may range from limited to strong or similar descriptors of the degree of support. Any use of this conclusion shall include a statement of the degree of support and the factor(s) limiting a stronger conclusion.

3. **Inconclusive / Lacking Support** is the conclusion that the observations do not provide a sufficient degree of support for one proposition over the other. Any use of this conclusion shall include a statement of the factor(s) limiting a stronger conclusion.

4. ***Support for Same Source** is the conclusion that the observations provide more support for the proposition that the impressions originated from the same source rather than different sources; however, there is insufficient support for a Source Identification. The degree of support may range from limited to strong or similar descriptors of the degree of support. Any use of this conclusion shall include a statement of the degree of support and the factor(s) limiting a stronger conclusion.

5. **Source Identification** is the strongest degree of association between two friction ridge impressions. It is the conclusion that the observations provide extremely strong support for the proposition that the impressions originated from the same source and extremely weak support for the proposition that the impressions originated from different sources.

OSAC FRS Proposed Std for Conclusions

Standard for Friction Ridge Examination Conclusions

Friction Ridge Subcommittee
Physics/Pattern Scientific Area Committee
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Qualifications and Limitations

- An examiner shall not assert that a source identification is the conclusion that two impressions were made by the same source or imply an individualization to the exclusion of all other sources.
- An examiner shall not suggest that the offered conclusion is an expression of absolute certainty.
- An examiner shall not assert or imply that latent print examination is infallible or has a zero-error rate.
- An examiner shall not cite the number of latent print comparisons performed in his or her career as a measure for the accuracy of a conclusion offered in the case at hand.
- An examiner shall not use the expression 'reasonable degree of scientific certainty' or similar assertions as a description of the confidence held in his or her conclusion.

OSAC FRS Proposed Std for Proficiency Testing

Specifies requirements for test selection, development, validation, administration, evaluation of results, and documentation of records.

OSAC 2022-S-0012
Standard for Proficiency Testing in Friction Ridge Examination

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

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Organization of Scientific Area Committees for Forensic Science

Overview:

- Requirements apply to tests obtained from external providers *and* tests generated internally by FSPs.
- Conformance to this Standard ensures that FSPs select tests for which the necessary documentation is available to enable a third-party evaluation of the robustness of the test. Conformance to this Standard alone, without consideration of the robustness of the test upon which performance was assessed, does not imply the performance of the FSP is reliable or satisfactory.
- Performance shall be evaluated for both FSP personnel *and* the overall FSP quality system.

OSAC FRS Proposed Std for Proficiency Testing

Specifies requirements for test selection, development, validation, administration, evaluation of results, and documentation of records.

OSAC 2022-S-0012
Standard for Proficiency Testing in Friction Ridge Examination

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Salient Requirements:

- FSPs must have documented evidence tests have been developed *and* validated IAW this standard (*including* tests purchased from accredited proficiency test providers).
- The extent to which test samples are representative of casework shall be measured and documented. Methods used for such assessment shall also be documented.
- Tests shall include response choices representing the full range of conclusions (identification, exclusion, inconclusive).
- Assigned values shall be based on observable or measurable attributes of the test specimen (i.e., inconclusive can be the "assigned value").

OSAC FRS Proposed Std for Proficiency Testing

Specifies requirements for test selection, development, validation, administration, evaluation of results, and documentation of records.

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Salient Requirements:

- Evaluation of performance shall be based on:
  - Agreement of participant results to the assigned values.
  - Sufficient documentation of observed data to support the participant's results.
  - Completion of the test in accordance with applicable FSP policies and procedures.
- Performance of FSP personnel is evaluated based on results *prior* to the application of quality controls (e.g., verification, technical review).
- Performance of the overall FSP quality system is evaluated based on results produced *after* the application of quality controls (e.g., verification, technical review).

OSAC FRS R&D Needs

1. ACE-V Bias
2. Assessing the Sufficiency and Strength of Friction Ridge Features
3. Close Non-Match Assessment
4. Complexity in Analysis and Comparison of Friction Ridge Impressions
5. Culture, Communication, Comprehension and Psychology in Friction Ridge Evidence
6. Determination of the Relevance of Marks to an Incident in Question Through Age and Activity Estimation
7. Development and Processing Techniques
8. Examiner Consistency During Friction Ridge Feature Mark-Up
9. Friction Ridge Statistical Modeling
10. Latent Fingerprint Image Quality Usage
11. Personnel Selection and Retention of Friction Ridge Science Practitioners
12. Technical Review and Verification

Visit Us Online!

https://www.nist.gov/osac/friction-ridge-subcommittee

OSAC Communications

- Provides monthly updates on forensic science standards moving through development process at SDOs and those moving through OSAC Registry process
- Available on OSAC's website: https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/osac-standards-bulletin

- Quarterly communication that provides updates on OSAC's program status, activities, accomplishments, and opportunities for public input with internal and external audiences.
- Available on OSAC's website: https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/osac-newsletter

- Follow us! https://www.linkedin.com/showcase/organization-of-scientific-area-committees-osac-for-forensic-science/

How Can You Get Involved

Sign up for OSAC communications

https://service.govdelivery.com/accounts/USNIST/subscriber/new

Become an OSAC member

https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/apply-join-osac

Review and comment on documents

Stay informed

https://www.nist.gov/osac

How AAFS Can Help…

- Promote the use of high-quality, technically sound standards
- AAFS will develop training, tools, and resources to enhance implementation efforts and broaden awareness of forensic science standards among communities of interest
- Training tools and resources will be available free to members and the public

Training – Tools/Resources - Outreach

Training

- Overview of **standards development process**
- **Discipline-specific training** on standards
- **Practical implementation** of standards
- **How to use tools/resources**
- Role of standards in the **legal community**

Resources

- Checklists/auditing tools to document **compliance**
- Checklists/auditing tools for **gap analysis** and to track progress towards implementation
- Training resource repository - including f**actsheets** understandable by the lay person

Outreach

- **>6,000 AAFS members**
- Specific targeted outreach to **legal communities**
- Collaborations with **professional organizations, SDOs and authoritative bodies**

Moving Forward…

- Increase awareness of OSAC Registry standards and the development of consensus-based standards in forensic science
- Training, tools and resources will be publicly available
- Resources will be made available for standards from multiple SDOs
- Watch for updates from Academy Newsfeed, AAFS.org, social media platforms and targeted outreach

FACTSHEET FOR ANSI/ASB STANDARD 119

The Analytical Scope and Sensitivity of Forensic Toxicological Testing of Blood in Medicolegal Death Investigations, First Edition, 2021

WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy to understand factsheets to summarize the contents of technical and professional forensic science standards. They are not intended to provide an interpretation for any portion of a published standard.

WHAT IS THE PURPOSE OF THIS STANDARD?

Toxicology testing is often required as part of the death investigation process. This may involve the identification and quantitation of numerous substances, including drugs and alcohol (ethanol).

The medicolegal death investigation community (consisting of forensic pathologists and coroners) may rely upon toxicological testing to assist in the determination of cause and manner of death.

This standard establishes the various substances that the laboratory must be able to identify in blood (scope of testing), as well as the appropriate level of testing (sensitivity) that is required.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

Adherence to the standard ensures that the toxicological testing performed in blood is sufficient and suitable for the type of investigation.

The standard provides direction to the medicolegal death investigation community regarding forensic toxicology testing and informs laboratories of the expectations required of them.

Forensic toxicology laboratories are encouraged to meet these minimum standards.

HOW IS THIS STANDARD USED?

Requirements for analytical testing of blood for investigations where there is a suspected toxicological cause of death are described in this standard. This includes laboratory tests for alcohol, drugs, drug metabolites, and other substances at specific thresholds or minimum concentrations. The scope of testing includes alcohol (ethanol), numerous classes of illicit and therapeutic drugs, and carbon monoxide.

Requirements for analytical testing of blood for investigations where there is a known or anatomical cause of death are also presented in this standard. In these instances, the scope of testing may be limited to alcohol (ethanol) and common drugs including sedatives, cannabinoids, cocaine, opioids, and amphetamines.

In unique circumstances, the testing may be limited based on case circumstances or as directed by the customer. In these cases, the laboratory shall be able to provide testing at the thresholds or concentrations provided in the standard.

This is a minimum standard of practice, which means that additional tests beyond those required in the standard may be necessary. Regional drug trends and case history should be considered to determine if additional drugs or substances should be included in the scope of testing.

Laboratories than cannot meet the standards internally may use external resources to meet the requirements (e.g., outsourcing, partnerships).

This factsheet is made possible through the following financial assistance award 70NANB22H087 awarded to AAFS from U.S. Department of Commerce, National Institute of Standards and Technology

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- Email: hswofford@hotmail.com

Vice-Chair – Josh Connelly

- Douglas County Sheriff's Office
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- Email: joshua.connelly@douglascounty-ne.gov

Executive Secretary – Carey Hall

- Minnesota BCA
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Friction Ridge Consensus Body Leadership

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Vice-Chair – Simon Cole

- University of California, Irvine
- Email: scole@uci.edu

Executive Secretary – Michele Triplett

- King County AFIS
- Email: michele.triplett@kingcounty.gov

FRS Subcommittee Breakdown

Category	**Current**	
Practitioner Total	14	70%
Federal	5	25%
State & Local	8	40%
Academia	4	20%
Private Sector (includes self-employed)	3	15%

FRCB Breakdown

Category	**Current**	
User - Government	8	44%
User – Non-Government	3	17%
Academics and Researchers	4	22%
Organizations	1	6%
Jurisprudence and Crim. Just.	2	11%
Total	**18**	**100%**