



Firearms and Toolmarks

Erica Lawton

AFTE 2021

Subcommittee Leadership

Position	Name	Organization	Email
Chair	Erica Lawton	Alabama Dept. of Forensic Sciences	erica.Lawton@adfs.alabama.gov
Vice Chair	Todd Weller	Weller Forensics, LLC	toddweller@wellerforensics.com
Executive Secretary	Melissa Oberg	Indiana State Police	moberg@isp.in.gov

In October 2020, Todd Weller stepped down as Chair and Erica Lawton was elected Chair

Subcommittee Voting Members



#	Name	Organization	#	Name	Organization
1	Steve Scott	FBI	12	Stephanie Happ	El Paso County Sheriff's Office
2	Mike Neel	Bureau of Alcohol Tobacco Firearms and Explosives	13	Hans Soon	NIST
3	Zachary Carr	Johnson County Sheriff's Office	14	Bill Demuth	Illinois State Police
4	Ted Vorburger, PhD	NIST	15	Melissa Oberg	Indiana State Police Crime Lab
5	Eric Collins	Contra Costa Co Sheriff Forensic Services	16	Erica Lawton	Alabama Department of Forensic Science
6	Jason Crafton	Missouri State Crime Lab	17	Nicholas Petraco	John Jay College
7	Max Morris, PhD	Iowa State University	18	Michael Stocker	NIST
8	Rebecca Mullen	Arkansas State Crime Lab	19	Todd Weller	Weller Forensics
9	Erich Smith	FBI	20	Carey Alvarez Bacha	Unified Metropolitan Forensic Crime Lab
10	James Carroll	Los Angeles County Sheriff's Office	21	Stephanie Madon	Iowa State University
11	Cassey Allen	TX Department of Public Safety - Austin	22	Maneka Sinha	University of Maryland Carey School of Law

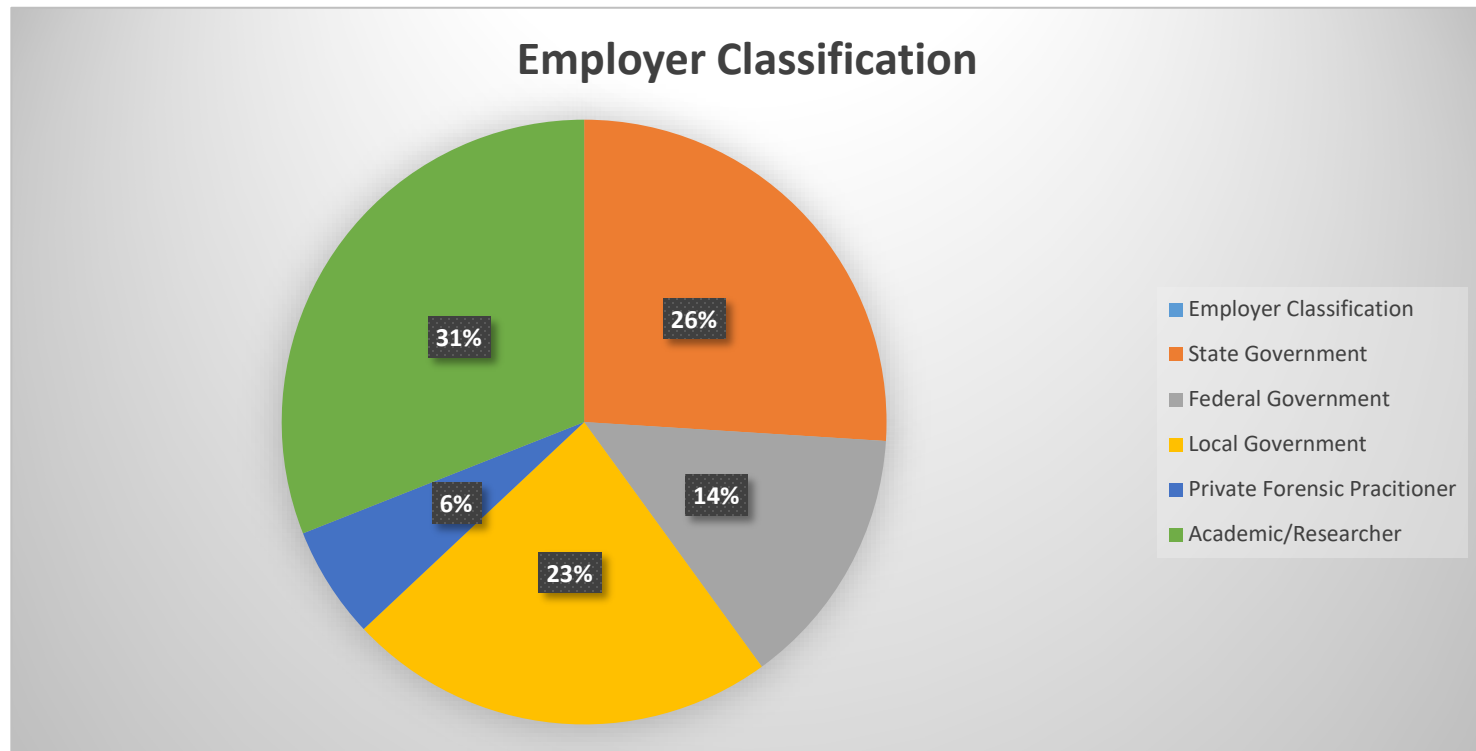
Resource TG Representative	
Stephanie Madon	Human Factors
Max Morris	Statistics
Rebecca Mullen	QIC
Maneka Sinha	Legal Resources



Subcommittee Affiliate Members

#	Name	Organization
1	Jodi Marsanopoli	Bureau of Alcohol Tobacco Firearms and Explosives
2	John Murdock	Contra Costa County Crime Laboratory
3	Nancy McCombs	California Department of Justice, Fresno
4	Gerhard Wevers	Institute of Environmental Science and Research, New Zealand
5	Chris Monturo	Hamilton County Coroner's Office
6	Wendy Gibson	VA Department of Forensic Science
7	Laura Knowles	Royal Canadian Mounted Police
8	Bridget Chambers	Metro Nashville Police Department
9	Gerard Dutton	Tasmania Police, Australia
10	Ryan Lilien	Cadre Research
11	Alan Zheng	NIST
12	Theo Chavez	Federal Bureau of Investigation
13	Stacey Hartman	Indiana State Police

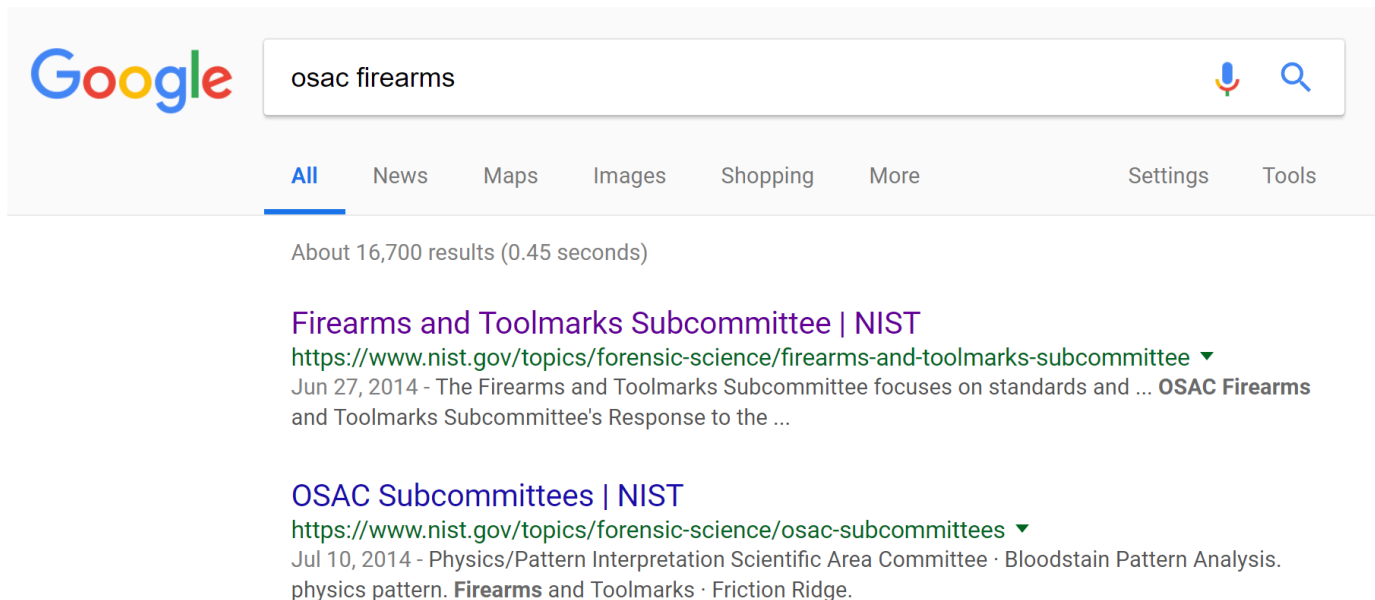
Employer Classification Mix of Voting Members



OSAC Firearms & Toolmarks Website

<https://www.nist.gov/topics/forensic-science/organization-scientific-area-committees-osac/firearms-and-toolmarks>

- SWGGUN legacy documents, research needs, etc.
- Google “OSAC Firearms”
 - Top Hit



Google search results for "osac firearms". The search bar shows "osac firearms" with a microphone and search icon. Below the search bar are tabs for All, News, Maps, Images, Shopping, More, Settings, and Tools. The results show "About 16,700 results (0.45 seconds)". The top result is "Firearms and Toolmarks Subcommittee | NIST" with a link to <https://www.nist.gov/topics/forensic-science/firearms-and-toolmarks-subcommittee>. The snippet below the link reads: "Jun 27, 2014 - The Firearms and Toolmarks Subcommittee focuses on standards and ... OSAC Firearms and Toolmarks Subcommittee's Response to the ...". The second result is "OSAC Subcommittees | NIST" with a link to <https://www.nist.gov/topics/forensic-science/osac-subcommittees>. The snippet below the link reads: "Jul 10, 2014 - Physics/Pattern Interpretation Scientific Area Committee · Bloodstain Pattern Analysis. physics pattern. Firearms and Toolmarks · Friction Ridge."

OSAC Firearms & Toolmarks Website

THE ORGANIZATION OF SCIENTIFIC AREA COMMITTEES FOR FORENSIC SCIENCE

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Firearms & Toolmarks Subcommittee

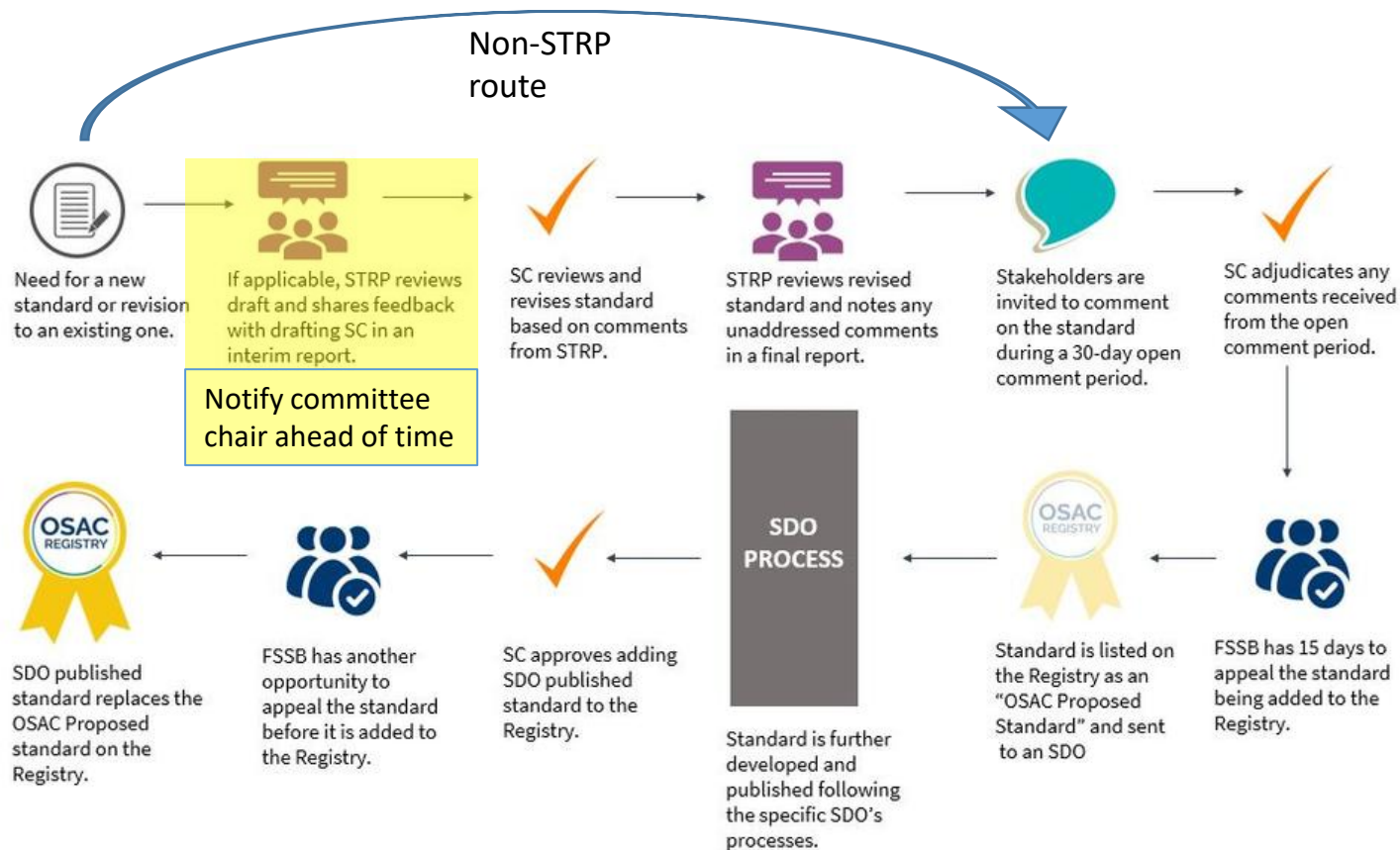


The **Firearms & Toolmarks Subcommittee** focuses on standards and guidelines related to the examination of firearm and toolmark evidence. This includes the comparison of microscopic toolmarks on bullets, cartridge cases, and other ammunition components and may also include firearm function testing, serial number restoration, muzzle-to-object distance determination, tools, and toolmarks.

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New OSAC 2.0 Process



Overview FATM Subcommittee

Executive Committee

Manage task groups (TG) and performs administrative tasks of subcommittee

Firearm Examination TG

Day to day laboratory examinations

Uncertainty of Measurement TG

Measurement uncertainty and quantifying decisions

Training TG

Standards new examiners and training program

Criteria for Identification TG

Standards regarding comparison conclusions

Novel Technology TG

Standards for emerging technology; e.g. 3D imaging and comparison algorithms

Winter 2015: FATM subcommittee formed task groups to focus on the most pressing/important topic areas in the discipline. The same task groups still exist and continue to work on standards and guidelines in each topic area.

Firearm & Toolmark Examination Task Group

Document Title	Status
Standard Guideline/Best Practice for the Safe Handling of Firearms and Ammunition	OSAC Registry April 6, 2021 
Standard Test Method for the Examination and Testing of Firearms	ASB STD 093 Going for FSSB Vote
Standard Test Method for the Examination and Testing of Fired Ammunition Components	Sent to SDO
Standard Method for the Examination and Documentation of Non-Firearm Tools and Toolmarks	Sent to SDO
Standard Test Method for the Examination and Restoration of Obliterated Serial Numbers	2.0 Process: Moving to STRP step
Standard Test Method for Muzzle-to-Garment Distance Determination	Draft in progress
Standard Test Method for the Examination and Comparison of Toolmarks for Source Attribution	Draft in progress

Novel Technology Task Group

Document Title	Document Status
Standard for Topography Comparison Software for Firearm and Toolmark Analysis	Passed ASB, going to ANSI
Standard for Implementation of 3D Technologies in Forensic Laboratories for Firearm and Toolmark Analysis	Passed ASB, going to ANSI
Standard for 3D Measurement Systems and Measurement Quality Control for Firearm and Toolmark Analysis	Passed ASB, going to ANSI
3D Virtual Comparison Microscopy	Draft in Progress
Technical Report of Reporting Results from 3D Measurement Systems and Algorithm-assisted/based Comparisons	Draft in Process

Uncertainty of Measurement Task Group

Document Title	Status
Best Practice Recommendation for Barrel and Overall Length Measurement for Firearms	Sent to ASB
Best Practice Recommendation for Measuring Trigger Pull of a Firearm and Estimating its Uncertainty	Sent to ASB
Best Practice Recommendation for Muzzle to Target Measurements and Measuring its Uncertainty	Draft in progress

Training Task Group Progress

Document Title	Status
Minimum Qualifications of Firearm/Toolmark Examiners Trainees	Sent to ASB
Standard for Firearm and Toolmark Examination Training Program	2.0 Process: Open Comment Period Closed, Finalizing Comment Adjudication before FSSB vote, Then send to ASB

Source Conclusions Task Group Progress

Planned Actions	Status
Range of Source Conclusions and Criteria in Toolmark Examinations	Sent to ASB
Standard for Peer Review of Source Conclusions in Toolmark Examinations	Sent to ASB
Expression of Source Conclusions	Draft in progress
Best Practices for the Resolution of Conflicts in Toolmark Source Conclusions	Draft in progress

Process Map Task Group

- Formed new task group in conjunction with AFTE leadership & NIST guidance to develop a Process Map for firearm & toolmark examination
- **UPDATE:** January 19, 2021 Published on OSAC website

Process Map Task Group Members:

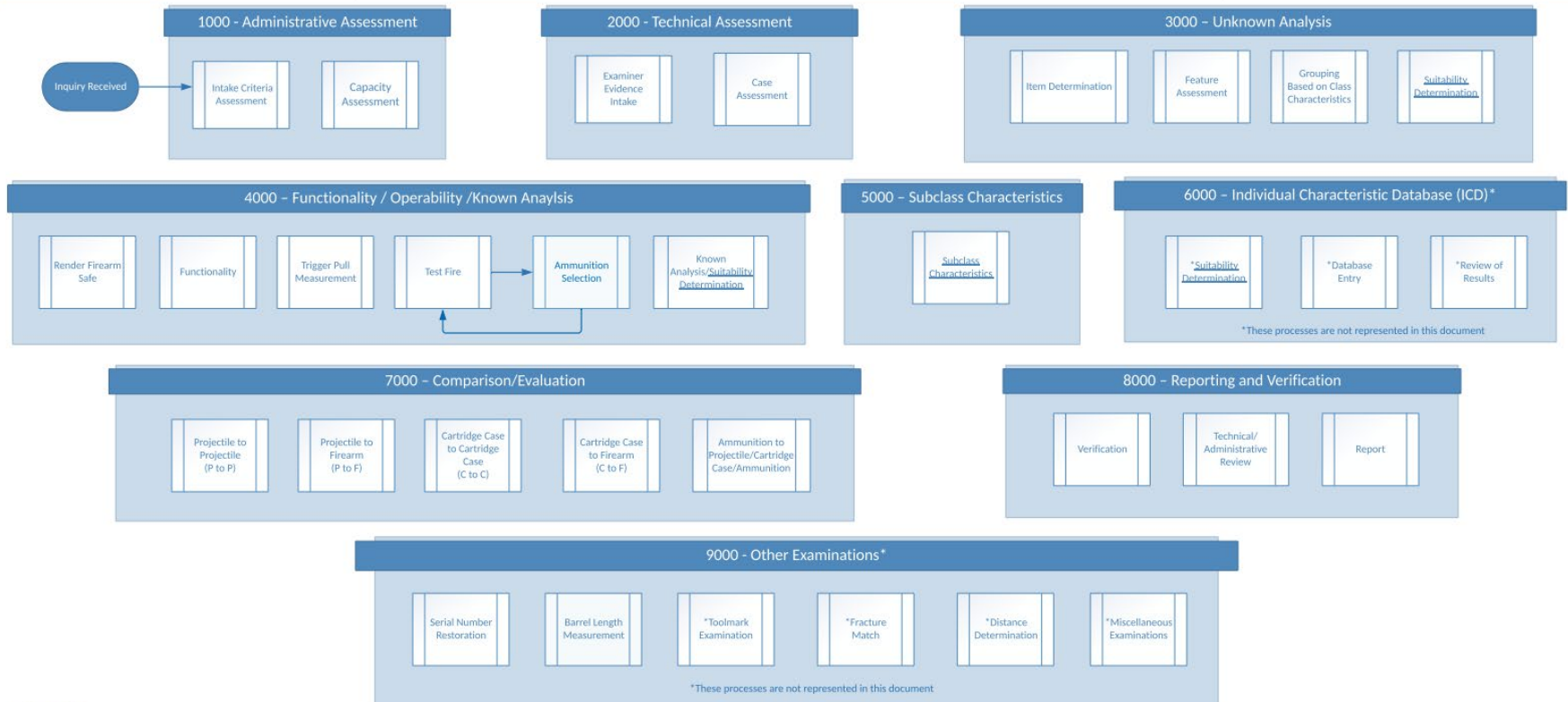
Gerard Dutton, Zachary Carr, Stephanie Happ, Stacey Hartman, Bridget Chambers, William (Bill) Demuth, and Ron Nichols

OSAC Office Facilitators:

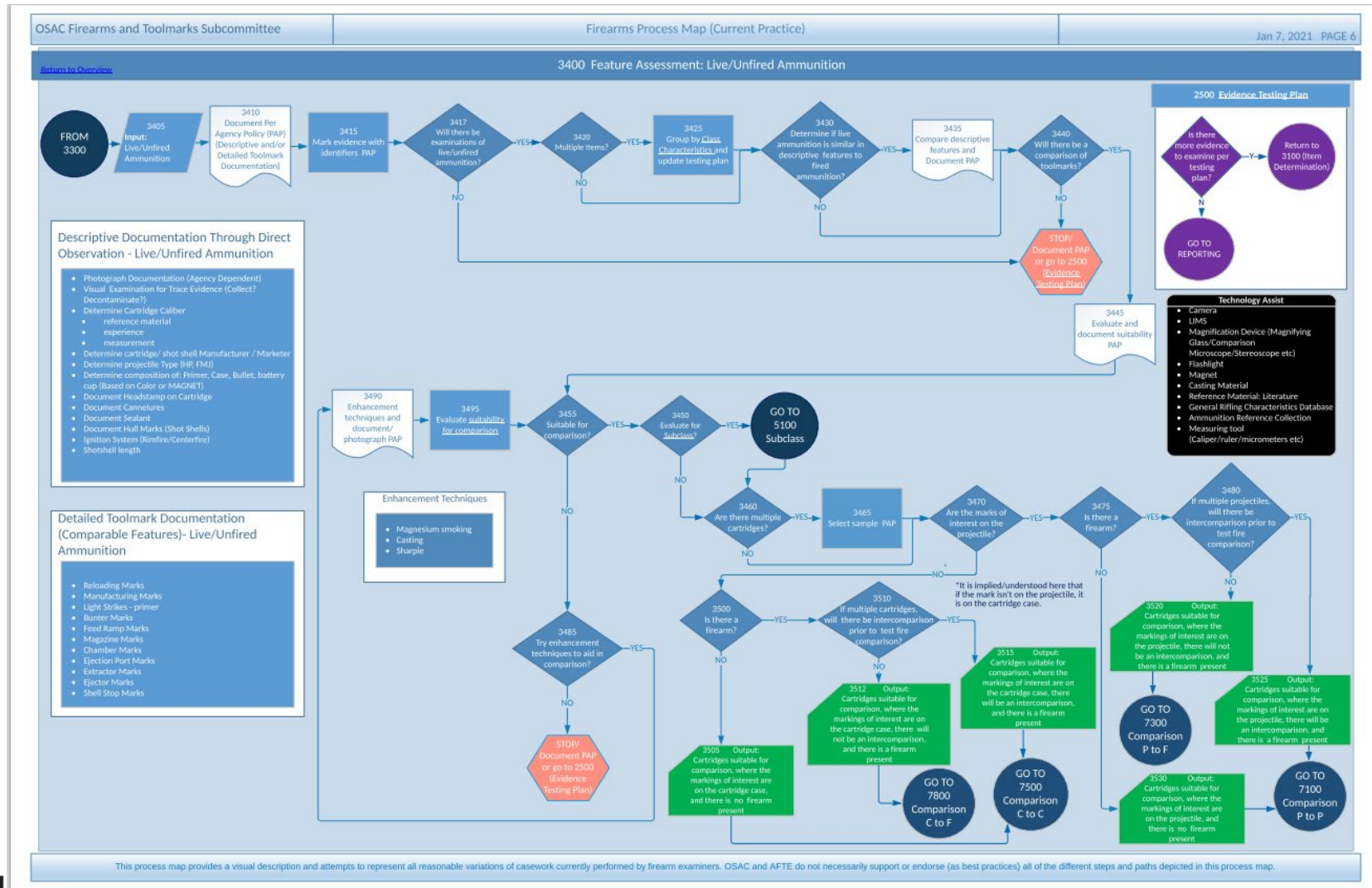
Melissa Taylor, Heather Waltke, and Blythe Toma

Firearms Process Map

OSAC Firearms and Toolmarks Subcommittee Firearms Process Map (Current Practice) Jan 7, 2021 PAGE 2



Firearms Process Map



Research Needs

- Each year we are asked to evaluate research needs within our discipline, the six current needs published include:
 - Assessment of Examiners' Toolmark Categorization Accuracy
 - Blind Verifications Needs Assessment
 - Cognitive Bias: To What Extent Does It Affect Firearm and Toolmark Comparison Outcomes
 - Consistency of Examiner Evaluation of Distance Determination GSR Patterns
 - Evaluation of Examiner Conclusions Utilizing a Five-Point Scale
 - Study to Assess the Accuracy and Reliability of Firearm and Toolmark Examinations
- More details available on website

Sub-committee Needs

- Members:
 - Term limits: each year old members term out and new members are needed each October
 - <https://www.nist.gov/osac-application-form>
- STRP Volunteers
 - Review of documents prior to 30 day open comment period and addition to the OSAC 2.0 Registry
 - <https://www.nist.gov/osac-application-form>

Questions?

- Email:
 - lawton5007@gmail.com
 - erica.Lawton@adfs.alabama.gov