

President's Message

My fellow AFTE Members and Guests;
Aloha and Welcome to AFTE 2008 here in Honolulu Hawaii!

As AFTE President I have the honor and privilege to welcome you to this 39th Annual AFTE Training Seminar. By now you know that Honolulu is located on the island of Oahu, also known as the "Gathering Place". What could be more fitting for AFTE than that? Once every year, we the membership of AFTE gather at our annual training seminar to promote the continuing education for the Science of Firearms/Toolmarks Identification and the sub-disciplines related to the field.

Your host committee has worked hard for the past two years to make you feel right at home here at the Ala Moana Hotel. The Ala Moana Hotel and the Ala Moana Center, was selected for the nearby activities as well as the hotel meeting facilities that should truly be excellent for this week to come.

I want to take this opportunity to thank the AFTE **BOD** and the 39th Training Seminar Host Committee for all their efforts for the past year. The hard work of this dedicated group of individuals is what makes a meeting like this possible. Your Host committee members can be identified wearing the dark blue shirts with the AFTE 2008 logo and they are available to help you with your needs this week. I also want to thank you, the members, for your support of AFTE.

Please enjoy the week, work hard, but at the same time take the opportunity to make some new friends and enjoy yourself.

Respectfully submitted;



Carlo J. Rosati
AFTE President 2007/2008





AFTE 2008 Host Committee



Finance

Curtis Kubo – Co-chair

Honolulu Police Department, HI

Cindee Saito – Co-chair

Honolulu Police Department, HI

Registration

Evelyn Pederson – Committee Chair

Vancouver Police Department, CANADA

Workshops

Ray Kusumi – Committee Chair

Washington State Patrol Crime Lab, WA

Technical Program

Jim Hamby – Committee Chair

International Forensic Science Laboratory & Training Centre, IN

Friends & Family Program

Charlie & Mino Davis – Committee Chair

Forensic Ballistics Technology, HI

Promotions

William Wheatley – Committee Chair

New Jersey State Police, NJ

Krzysztof Audinis

Union County New Jersey PD, NJ

Stephen Deady

Independent Examiner, NJ

Mike Sandford

Union County New Jersey PD, NJ

Golf

Mel Lorenzo – Co-chair

Audio-Visual

Michael Coakley – Committee Chair

Prince George's County, MD

Additional Contributing Members

Webmaster

Scott Doyle

Kentucky State Police, KY

AFTE News Editor

Matthew Noedel

Independent Examiner, WA



Week at a Glance

Sunday, May 18th

8:00 a.m. – 6:00 p.m.	Certification Examinations
9:00 a.m. – 4:00 p.m.	Annual Garry Rathman Golf at Ko'olau Golf Club
8:00 a.m. – 5:00 p.m.	Source Tool Recognition - Part I Workshop
1:00 p.m. – 6:00 p.m.	Trajectory Reconstruction & 3D Scanning Workshop
Noon – 6:00 p.m.	Early Registration
6:00 p.m. – 9:00 p.m.	Welcome Reception – Hibiscus Ballroom I

Monday, May 19th

6:30 a.m. – 8:00 a.m.	Continental Breakfast (provided)
7:00 a.m. – 8:00 a.m.	Registration
8:00 a.m. – 8:30 a.m.	Opening ceremonies
8:30 a.m. – 11:30 a.m.	Morning Technical Session
11:30 a.m. – 12:30 p.m.	Lunch (provided)
12:30 p.m. – 3:45 p.m.	AFTE Business Meeting
4:00 p.m.	Bus pick-up for luau at Paradise Cove

Tuesday, May 20th

6:30 a.m. – 8:00 a.m.	Continental Breakfast (provided)
7:00 a.m. – 8:00 a.m.	Registration
8:00 a.m. – 11:40 a.m.	Morning Technical Session
11:40 a.m. – 1:00 p.m.	Lunch (provided)
1:00 p.m. – 5:00 p.m.	Afternoon Technical Session
6:00 p.m. – 9:00 p.m.	Barrel Manufacturing Workshop
6:00 p.m. – 10:00 p.m.	GSR Analysis Workshop

Wednesday, May 21st

6:30 a.m. – 8:00 a.m.	Continental Breakfast (provided)
7:00 a.m. – 8:00 a.m.	Registration
8:00 a.m. – 11:45 a.m.	Morning Technical Session
11:45 a.m. – 1:00 p.m.	Lunch (provided)
1:00 p.m. – 5:00 p.m.	Afternoon Technical Session
6:00 p.m. – 9:00 p.m.	Barrel Manufacturing Workshop
6:00 p.m. – 8:00 p.m.	Ammunition Identification and CartWinPro Workshop

Thursday, May 22nd

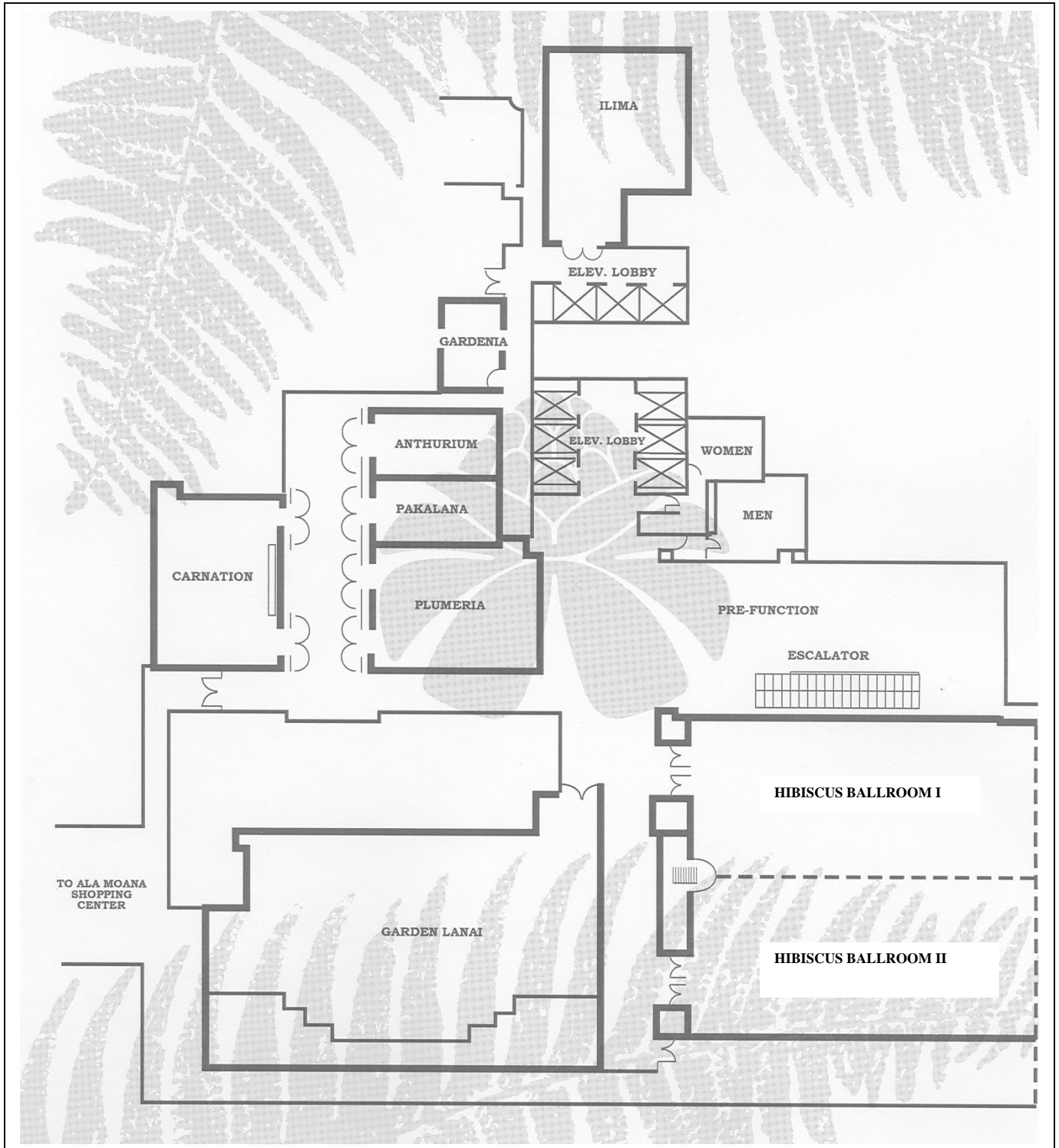
6:30 a.m. – 8:00 a.m.	Continental Breakfast (provided)
7:00 a.m. – 8:00 a.m.	Registration
8:00 a.m. – 11:45 a.m.	Morning Technical Session
11:45 a.m. – 1:00 p.m.	Lunch (provided)
1:00 p.m. – 3:00 p.m.	Afternoon Technical Session
3:00 p.m. – 4:00 p.m.	Continuation of AFTE Business Meeting (as required)
6:00 p.m. – 7:00 p.m.	Pre-banquet reception
7:00 p.m. – 10:30 p.m.	Banquet

Friday, May 23rd

8:00 a.m. – 5:00 p.m.	Source Tool Recognition - Part II Workshop
8:00 a.m. – 4:00 p.m.	Basics of Firearm Mechanisms Workshop
8:00 a.m. – noon	Integrity, Character and Ethics Workshop
1:00 p.m. – 5:00 p.m.	Critical Decision Making Workshop



Meeting Room Floor Plan





Sunday, May 18th



Schedule of Examinations, Workshops and Events

7:30 a.m.	Depart for Annual Garry Rathman Memorial Golf	<i>Hotel Lobby</i>
8:00 a.m. to 11:00 a.m.	Certification Exam – Firearm Written Test	<i>Anthurium</i>
8:00 a.m. to 5:00 p.m.	Source Tool Recognition: Identification Approach for Cartridge Case Comparison – Part I Beta Tam, Formerly of LAPD Crime Lab, Los Angeles, CA, USA	<i>Ilima</i>
8:00 a.m. to 6:00 p.m.	Exhibitor set-up	<i>Garden Lanai</i>
Noon to 3:00 p.m.	Certification Exam – Tool Mark Written Test	<i>Anthurium</i>
Noon to 6:00 p.m.	Registration	<i>Foyer</i>
1:00 p.m. to 6:00 p.m.	Trajectory Reconstruction & 3D Scanning Lucien Haag, Forensic Science Services, Carefree, AZ, USA	<i>Plumeria</i>
3:00 p.m. to 6:00 p.m.	Certification Exam – Gunshot Residue Written Test	<i>Anthurium</i>
6:00 p.m. to 9:00 p.m.	Welcome Reception	<i>Hibiscus Ballroom I</i>



Monday, May 19th



Moderator: Jim Hamby

Location: Hibiscus Ballroom I

7:00 a.m. Registration

8:00 a.m. Opening Ceremony

Welcome – Carlo Rosati, AFTE President
Cindee Saito / Curtis Kubo, 2008 Host Committee

8:30 a.m. Borescopes for Forensic Scientists

Ken Harrington, Gradient Lens Corporation, Rochester, NY, USA

8:45 a.m. 2008 Recall / Safety Warning Update

Dom Denio, FBI Laboratory, Quantico, VA, USA

8:55 a.m. Dinosaur Club Update

Dave Brundage, Forensic Firearms Consulting, Nashville, TN, USA

9:05 a.m. What's New In Ammunition?

George Kass, Forensic Ammunition, Okemos, MI, USA

9:30 a.m. BREAK – Sponsored by CartWinPro

Garden Lanai – Exhibitor Area

10:00 a.m. Deformed Bullet Acquisition on IBIS BulletTRAX-3D®

Dr. Danny Roberge, Forensic Technology Inc., Cote St-Luc, Quebec, CANADA

10:30 a.m. Infrared Imaging and FlashCorrelation® - An Innovative Approach to Case Linkage

Dr. Francine Prokoski, SED Technology LLC, Fairfax, VA, USA

10:45 a.m. Infrared Imaging and FlashCorrelation® - An Innovative Approach to Case Linkage

Jack Dillon, SED Technology LLC, Fairfax, VA, USA

11:00 a.m. Statistical Analysis of Toolmark Striations

Dr. L. Scott Chumbley, Iowa State University, Ames, IA, USA

11:30 a.m. LUNCH

Buffet line in foyer with seating in Garden Lanai and Hibiscus Ballroom II

12:30 p.m. AFTE Business Meeting

AFTE President Carlo Rosati and AFTE Board Members

3:45 p.m. Daily Technical Sessions Ends

4:00 p.m. Evening Activity

NO SCHEDULED WORKSHOPS FOR MONDAY EVENING



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Borescopes for Forensic Scientists

Ken Harrington

The primary goal of the presentation is to clarify which type of borescope performs the best in laboratory and in crime scene applications. I have run into this issue with AFTE Members on several occasions.

I graduated from Roanoke College with a Bachelor's Degree in Political Science and was commissioned as a Naval Officer with a Top Secret clearance. I have a Master's Degree from the Executive Development Program at the University of Rochester and am the Market Manager-Shooting for Gradient Lens Corporation as well as a Technical Advisor to AFTE.

Ken Harrington, Gradient Lens Corporation, 207 Tremont Street, Rochester, NY 14608 - 585.235.2670 x 706, www.GradientLens.com

2008 Recall / Safety Warning Update

Dom Denio

Dom will distribute the 2008 Firearm and Ammunition Recall/Safety Warning Update and demonstrate how it is used and provide an update to everyone attending the meeting.

Dom Denio, FBI Laboratory, 2501 Investigation Parkway, Quantico, VA 22135 – 703.632.7380, ddenio@leo.gov



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Dinosaur Club Update

Dave Brundage

Dave will introduce the audience to the 'Dinosaur Club' to include why it was created, who the members of the club are, and what the members do for the Association.

Dave Brundage, Forensic Firearms Consulting, 8424 Indian Hills Drive, Nashville, TN 37221 – 317.490.1199, dbrundage@bellsouth.net

What's New In Ammunition

George Kass

George – a member and technical advisor for AFTE - will provide a discussion of what 'new' ammunitions have recently been introduced by the various ammunition manufacturers. If time permits, he will discuss the ammunition CD that he has available for sale to laboratories.

George Kass, Forensic Ammunition, 4512 Nakoma Drive, Okemos, MI – 517.349.9362, forammo@aol.com



Abstracts

Deformed Bullet Acquisition on BulletTRAX-3D®

Dr. Danny Roberge

Objectives: The objective is to acquire the 3D relevant features on a deformed bullet surface. What makes 3D acquisition of bullets highly challenging is the order of magnitude difference between the depth of valuable marks, which may be at the submicron level, and the deviation from the cylindrical shape that defines pristine bullets, which can be as high as several millimeters.

Methodology: Developing a highly efficient acquisition mode can only be an iterative process. This presentation covers successive improvements in the acquisition of bullets on IBIS BULLETTRAX-3D, starting from acquisition of pristine bullets, which can be done by rotating the bullet, up to the damaged mode currently developed for the 2.2 version of the system, which also requires translational motions. The problems encountered during the development of the damaged mode are discussed.

Results: Algorithms have been developed in order to compute the position of the motor of the rotation axis and determine the motion that must be applied on the bullet in order to insure a perpendicular surface over the whole acquisition process. By using these algorithms, IBIS BULLETTRAX-3D can follow the shape of the surface over the whole acquisition process.

Conclusions: IBIS BULLETTRAX-3D (version 2.2) can acquire highly deformed bullets that could not be imaged in previous versions of the system.

Biography: Danny Roberge completed a Ph.D. in optical pattern recognition in 1995. He is a senior scientist in the Research Team at Forensic Technology since 2000 and has developed and implemented algorithms related to acquisition and correlation of ballistic images in IBIS Heritage and IBIS BulletTRAX-3D.

Dr. Danny Roberge, Forensic Technology, 5757, Cavendish Blvd. Suite 200, Cote St-Luc, Quebec, CANADA H4W 2WB, 514-489-4247, Fax: 514-485-9336, danny.roberge@contactft.com



Abstracts

Infrared Imaging and FlashCorrelation® - An Innovative Approach to Case Linkage

Dr. Francine J. Prokoski

Objectives: Novel techniques and systems are under development to use infrared imaging rather than visible light imaging as the basis for collection and comparison of toolmarks. The resulting elimination of lighting-induced artifacts promises to improve detection, collection, and matching of impression and striae evidence. The consistency of infrared features across siblings allows for the use of quantitative analysis with low false positive errors. Early applications include cartridge cases, tool scrapes, and footwear impressions.

Methodology: Although normally used to obtain temperature measurements, IR images are the result of both emissivity and thermal distributions across the imaged surface. Disturbing an item's surface texture creates an emissivity difference producing local changes in the infrared image even in the absence of thermal changes. Infrared imaging requires no illumination and therefore eliminates shadows, glint, and other lighting-induced variations and artifacts associated with visible light imaging.

Tool marks that are of forensic interest frequently produce significant emissivity variations. Examples include firing pin indentations, breech face marks, and screwdriver scrapes. They create highly detailed features in IR imagery without temperature change. Use of IR imaging for toolmark identification therefore does not involve temperature changes; it collects and compares emissivity variations associated with impression and striae evidence.

Aside from not providing color information, IR images contain all the features seen in visible light images. Therefore, the IR images can be matched against existing databases of visual images, allowing the new technology to be implemented immediately. A matching engine named FlashCorrelation® is used to compare an IR image against databases that can be a combination of IR and visible light images.

Dual-spectrum imaging in both IR and visible bands, permits immediate detection of apparent visible features that are in fact illumination-induced artifacts. Eliminating such artifacts will reduce the false positive error rate in visual matching with current systems. The IRID technology can therefore be implemented as a front-end filter for current systems or as a stand-alone system offering both IR and visible light image comparison.

Results: Initial comparison tests have shown accuracy improvements when imaging is performed with infrared rather than visible light cameras. Current results as of the conference date will be discussed by Jack Dillon in his presentation, and can be seen at the SED Technology LLC booth. Applications to cartridge cases, tool mark scrapes, and footwear impressions will be included.

Conclusions: Infrared imaging offers potentially significant advantages in the collection and comparison of toolmark evidence.

Biography: Dr. Prokoski has thirty years experience in security technology, surveillance, forensics and biomedical engineering. She is a recognized expert in developing infrared imaging systems for identification and condition assessment, and developing matching engines for accurate high-speed comparisons against large databases. She is principal inventor on several issued and pending patents for related technologies. Dr. Prokoski is currently the principal investigator on a DOJ grant evaluating 2D and 3D Infrared imaging, coupled with high speed pattern recognition, to evaluate impression evidence. Prior experience includes:

- Founder and President of Infrared Identification Inc. (IRID Inc.) developing methods and systems for infrared imagery applications.



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- CEO of Hitech Engineering, producing secure computer systems for government.
- Vice President of Energy Inc., an international nuclear engineering company providing safety, security, and systems in Japan, Korea, Taiwan, Europe and North America.
- Consultant to IAEA on Nuclear Safeguards and Surveillance. Also senior staff of the CIA responsible for the collection and security of technical information.
- Dr. Prokoski received Doctorate and Masters Degrees in Electrical Engineering and Biomedical Engineering from the University of Connecticut and NYU. She has 28 issued and pending patents and has authored more than 50 technical publications.

Dr. Francine Prokoski, SED Technology LLC, 5410 Colchester Meadow Lane, Fairfax, VA 22030 – 703.278.9322, Fax 703.278.8331, fprokoski@sedllc.com



Abstracts



Infrared Imaging and FlashCorrelation® - An Innovative Approach to Case Linkage

Jack Dillon

Objectives: The immediate objective of SED Technology LLC has been to develop a capability to enhance the collection, quantitative analysis, storage and maintenance of chain of custody of impression-type evidence. Integral to this effort is the development of the ability to image and make linkages between varieties of tool marked items, including striated marks and impressions in metal surfaces. These surfaces include fired bullets and cartridge cases often recovered in personal crimes, as well as in metallic items commonly recovered in property crimes. The ultimate objective will be to provide an enhanced means of investigative case linkage through high-probability evidence associations. This will produce the lowest possible number of false positive results and the most efficient use of examiner time in establishing conclusive identifications through conventional microscopy.

Methodology: The methodology employed is based on a patented 3D/IR Visual imaging system coupled with FlashCorrelation® technology, a high speed pattern recognition system employing advanced algorithms. Initially, populations of known specimens were established for both striated marks and impressions in metal. The first group (striated marks) was made in sheet lead using individually ground interchangeable screwdriver bits drawn laterally across the lead. A second group of striated marks was established using primer shearing marks produced by a variety of .40 S&W caliber Glock pistols at a police firing range. A third group of specimens bearing impressions was assembled using .44 Magnum caliber cartridge cases bearing parallel breech face marks. Fabrication of the imaging system followed and included an innovative infrared imaging system to acquire surface topography of the striated marks and impressions in the test specimens. Imaging included enhanced visual imaging, visual with 2D IR and 3D/IR+Visual. Once this data was acquired, FlashCorrelation was applied to the surface topography data to generate high-probability associations. These results were then subjected to proof of concept testing using conventional comparison microscopy to validate results.

Results: As of this writing the data analysis is in progress and is being assembled to provide initial feedback to allow modifications to the IR imaging protocols and refinement of the data analysis.

Conclusions: It is expected that the proof of concept studies will ultimately produce an integrated system that will have a high degree of accuracy, speed, cost-effectiveness, and applicability to many types of impression evidence, as well as standardized imagery based on the innovative use of IR imaging and FlashCorrelation®.

Biography: Jack Dillon earned a B. S. from the United States Naval Academy and an M. Ed. from the University of Virginia. Commissioned in the United States Marine Corps in 1964, he attained the rank of Captain of Marines, serving in Vietnam and the Dominican Republic. Appointed a Special Agent, FBI, in 1970, he investigated diverse criminal violations, including organized crime, bank robberies, extortions and kidnappings in the Chicago and New York offices of the FBI. In 1976 he received orders to the Firearms/Toolmarks Unit of the FBI Laboratory for training as an examiner, where he examined evidence, conducted training and provided on-site field support in domestic cases, as well as in Latin America. During this period Jack taught the FBI Laboratory's Gunshot and Primer Residues Course and the Specialized Techniques in Firearms Identification Course. From 1982-1988 he was assigned to the FBI Academy where he designed and taught basic forensic courses for newly-appointed FBI and DEA Agents, as well as management-level forensic science courses for police administrators from the United States and abroad. Jack was appointed Chief of the FBI Firearms-Toolmarks Unit in 1988 and coordinated the activities of 14 Agents in forensic examinations, domestic and foreign field support, training and research projects. He retired from the FBI in 1994 and continues to consultant in forensic firearms cases and in training design and delivery. For several years he taught forensic courses in the Masters of Forensic Science program at George Washington University. He also wrote the curriculum for the BATFE National Firearms Examiner Academy, and was a major contributor to the on-line training for



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firearms-toolmarks examiners soon to be offered by the National Forensic Science Technology Center. He currently teaches and mentors students in courses presented at the National Firearms Examiner Academy. Jack is a Past President and Emeritus Member of the Association of Firearm and Toolmark Examiners, and was selected as Member of the Year for 2002-2003.

Jack Dillon, SED Technology LLC, 5410 Colchester Meadow Lane, Fairfax, VA 22030 – 703.278.9322, Fax 703.278.8331, jhdillonjr@comcast.net



Abstracts

Statistical Analysis of Toolmark Striations

Dr. L. Scott Chumbley

The objective of this study is to develop a statistical algorithm that would automatically and objectively compare quantitative data files obtained from toolmarks. The goal is to determine whether statistical validation can be given in support of toolmark examiner assertions, as a partial answer to questions raised by the Daubert decision.

Toolmarks were obtained from both sides of 50 sequentially manufactured screwdriver tips. The surface roughness of the toolmarks was measured using a stylus profilometer, producing a set of several thousand distinct data files. A computer program was developed using an internal verification and validation algorithm that employed a Mann-Whitney statistical analysis.

Results indicate that successful, non-ambiguous matching of two separate toolmarks is possible using the developed validation algorithm. Constraints on the association of a suspect tool to a particular toolmark require that test marks be made using the correct side of the tool and that the marks be made at similar angles.

These constraints are well known to toolmark examiners and have been known for many years. However, to our knowledge, this study presents the first totally quantitative, objective, statistical evidence in support of the expertise of toolmark examiners on this subject. As such it provides documentation as to the reliability and scientific nature of toolmark identifications.

While correct judgments can be made automatically in the majority of cases, false positives and negatives are seen in the data. As an extension of these initial findings, the research group at ISU has been tasked by the National Institute of Justice to determine whether these observed errors are due to the algorithm itself, or are related to the quality of the data, which is necessarily constrained in relation to information available to an experienced examiner. During the course of AFTE 2008 we are encouraging examiners to participate in this blind study by volunteering a few minutes of their time to conduct some comparisons for us. Information on how these comparisons will work will be provided at the end of the talk.

Dr. Scott Chumbley is a Professor in the Materials Science and Engineering Department at Iowa State University (ISU) and holds a joint appointment with Ames Laboratory, the DOE laboratory located on the campus of ISU. His undergraduate and graduate degrees are in Metallurgy and his field of expertise is materials characterization using optical and electron microscopy and x-ray diffraction. Prof. Chumbley is an active participant in the Midwest Forensic Research Center (MFRC), an educational and research center of ISU, through which he has worked with law enforcement officials to use his expertise in materials characterization to examine possible evidence. He has been involved with the forensic community in a number of educational efforts involving basic operation of the scanning electron microscope (SEM). He has been the principal investigator on funded research for the FBI and currently is conducting research on the quantification of tool markings for the National Institute of Justice (NIJ). Dr. Chumbley also was a member of a National Academy of Sciences committee to investigate the technical feasibility of establishing a national ballistics database whose report is currently in preparation.

Dr. L. Scott Chumbley, Professor - Materials Science and Engineering Department, 2220 Hoover, Iowa State University, Ames, Iowa 50011 - 515-294-7903 (Scientist, Ames Laboratory, 214 Wilhelm, Ames, Iowa 50011, 512.294.7903



Tuesday, May 20th



Morning Moderator: Bob Shem
Afternoon Moderator: Dom Denio

Location: Hibiscus Ballroom I

- 7:00 a.m. Registration**
- 8:00 a.m. General Announcements**
2008 Host Committee
- 8:05 a.m. Brief Introduction of AFTE 2008 Vendors**
- 8:15 a.m. Update on AFTE 2009**
Yamil Garcia, Metro-Dade Police Crime Lab, Miami, FL, USA
- 8:25 a.m. National Firearms Examiner Academy (NFEA) – An Update**
James Yurgealitis, NFEA Program Manager, Ammendale, MD, USA
- 8:40 a.m. GLOCK'S Signature Barrel – Durability of the EBIS Markings**
Carolyn Martinez, MFS, Corpus Christi PD Crime Lab, Corpus Christi, TX, USA
- 9:10 a.m. Has the Barrel Been Changed? – An Example of Why We Need Reference Collections**
Kevan Walsh, ESR, Auckland, NEW ZEALAND
- 9:35 a.m. BREAK**
Garden Lanai – Exhibitor Area
- 10:00 a.m. Improvised Firing Devices**
Paul Murphy, Forensic Technology Inc., Cote-St-Luc, Quebec, CANADA
- 10:30 a.m. Introduction to the Sporting Arms and Ammunition Manufacturers' Institute, Inc. (SAAMI)**
Kenneth Green, BMSE, SAAMI Technical Affairs Director, Frankfort, NY, USA
- 11:40 a.m. LUNCH**
Buffet line in Foyer with seating in Garden Lanai and Hibiscus Ballroom II
- 1:00 p.m. General Announcements**
2008 Host Committee
- 1:05 p.m. Firearms Recoil Dynamics**
Alexander Jason, Anite Group, Pinole, CA, USA
- 1:25 p.m. When Bullets Talk – Do You Listen?**
Lucien Haag, Forensic Science Services, Carefree, AZ, USA
- 1:55 p.m. Falling Bullets**
Lucien Haag, Forensic Science Services, Carefree, AZ, USA
- 2:25 p.m. BREAK**
Garden Lanai – Exhibitor Area



Tuesday, May 20th



- 3:00 p.m. City Shooting: A Complex Reconstruction**
Alexander Jason, Anite Group, Pinole, CA, USA
- 3:30 p.m. Visualized General Rifling Characteristics File**
Tsuneo Uchiyama, National Research Institute of Police Science, Kashiwa, JAPAN
- 3:45 p.m. Toolmark Considerations in Damaged Commercial Drug Packaging**
Sergeant Gerard Dutton, Tasmania Police Ballistics Section, Hobart, AUSTRALIA
- 4:00 p.m. Establishing the Golden Images of NIST SRM Standard Bullets and Casings for Nationwide Ballistics Measurement Traceability and Quality System**
Dr. John Song, NIST, Gaithersburg, MD, USA
- 4:40 p.m. NIJ – Release of NIJ Sponsored AFTE Media Based Training Program**
Dr. Katy Savage, NFSTC, Largo, FL, USA
- 5:00 p.m. Daily Technical Session Ends**

Evening Schedule

- 6:00 p.m. to 10:00 p.m. GSR Analysis: Interesting Scenarios & Problems Encountered** *Plumeria*
John Webb, FBI Laboratory, Quantico, VA, USA
- 6:00 p.m. to 9:00 p.m. Barrel Manufacturing** *Pakalana*
Allan Offringa, retired ATF
Sponsored by: Savage Range Systems



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Update on AFTE 2009

Yamil Garcia

Yamil Garcia, from the Metro-Dade Police Crime Lab, Miami, FL, USA, will provide the membership with information (dates, hotel location, etc) concerning the AFTE 2009 Meeting. This meeting will celebrate the 40th Anniversary of our Association.

National Firearms Examiner Academy (NFEA) – An Update

Jim Yurgealitis

Special Agent Jim Yurgealitis will present an update on the NFEA. NFEA Class 0701 completed Phase IV of the academy and graduated this past Friday March 28th. As usual the students presented their research papers with a “best presentation” determination made by a review panel (Jack Dillon, Ann Davis and Glen Beach). Carolyn Martinez of the Corpus Christi, TX Police Department was determined to have made the best presentation. Accordingly ATF will send Ms. Martinez to AFTE to present her paper during the seminar.

Special Agent James Yurgealitis, Program Manager, Advanced Investigations Training Branch, National Firearms Examiners Academy, 6000 Ammendale Road, Ammendale, Maryland 20705 – 240.264.1401, Fax 240.264.1487, mobile 202.438.7014



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GLOCK'S Signature Barrel – Durability of the EBIS Markings

Carolyn Martinez

GLOCK pistols have always presented difficulty in regards to differentiating bullets fired from different GLOCK barrels. The Enhanced Bullet Identification System (EBIS) was GLOCK's most recent attempt in response to resolving this conflict. This method creates a "signature" in the barrel which imparts gross lines down the length of the barrel on the lands of the rifling. These gross lines vary in width, depth, and spatial relationship, much in appearance as a bar-code would look. Small imperfections in the depths of these gross lines are also noted and appear to have been intended to have an impact on the appearance of the finer lines on the lands of the fired bullets. Durability testing was conducted to see the reproducibility of the signature markings after enduring 250-10,000 rounds of ammunition being fired through the barrels. Results showed that the gross lines endured, but there was a disparity with the finer lines. This disparity reduces the chances of identifying GLOCK bullets by a sufficient correspondence of individual characteristics; however, the manufacturing method lends itself to imparting class characteristics which may aid in differentiating one GLOCK bullet from another in a "limited universe" situation.

Biography: Employed by Corpus Christi Police Dept. Forensic Services Division and a member of the US Army Reserves. Education: B.S. (Biology) University of Illinois, Champaign-Urbana, M.F.S. (Master's of Forensic Science) George Washington University, DC.

Carolyn Martinez, Corpus Christi PD Forensic Lab, 321 John Sartain, Corpus Christi, TX 78401, 361.886.2638, Fax 361.886.2642, carolynMA@cctexas.com



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Has the Barrel Been Changed? – An Example of Why We Need Reference Collections

Kevan Walsh

Objectives: Conflicting scientific evidence raised doubt regarding the exclusion of one suspect of a double homicide on the basis of the rifling characteristics of his Remington Model 12 rifle. It was proposed that the barrel had been exchanged with another barrel having different rifling characteristics to the projectiles recovered from the two victims. This was supported by apparent discrepancies between the barrel date code mark and the serial number, which were at odds with the manufacturer's information. The barrel date code indicated that it had been made in September 1929, whereas the serial number indicated that the rifle was produced in June 1930. Information taken from a few rifles appeared to support this discrepancy as being very significant.

Methodology: I was asked to examine the rifle for physical evidence that the barrel had been removed and replaced. Manufacturer's records were compared with barrel markings and serial numbers from various forensic and private firearm collections.

Results: There was no physical evidence to support the replacement of a barrel. There was no evidence of multiple witness marks and the existing witness mark was in alignment. There were no toolmarks seen on the barrel or receiver that might arise from them being joined in a do-it-yourself fashion.

Information from 33 rifles from various collections was compiled and the date information was graphed. This displayed a clear trend during the latter years of production that showed a lag between barrel production and rifle assembly. The discrepancy observed for the date information of the suspect's rifle fell within the range expected given the trend observed.

Conclusions: This work highlighted the valuable insight that can be provided by firearms reference collections. In this case, a review of just one or two firearms would have been insufficient to reveal the required information.

Biography: Kevan has worked in New Zealand in the field of firearms and toolmarks since 1989. He has been a regular member of AFTE since 1990.

Kevan Walsh, ESR, 120 Mount Albert Road, Auckland, New Zealand 1142 – 64-9-8153903, Fax 64-9-8496046, kevan.walsh@esr.cri.nz



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Improvised Firing Devices

Paul Murphy

Objectives: Improvised firing devices can be categorized into two main groups (1) Home made firearms and (2) Modified/improvised firearms. This phenomenon is a major problem in many countries and Forensic Firearm Examiners from all over the world encounter these devices on a daily basis. This presentation will address various aspects of improvised firing devices as well as improvised firing devices commonly encountered in India and South Africa.

Methodology: The author/presenter examined numerous improvised firing devices during his career as a Forensic Ballistic Specialist in South Africa. He also researched "Country Made Firearms" in India to determine the best practice for imaging fired components into the BulletTRAX and BrassTRAX systems.

Results: Home made firearms can be easily manufactured from material that can be obtained from any hardware store with basic hand tools. Air rifles and blank firing devices are easily modified or improvised into devices which are capable of firing conventional ammunition. Mechanisms and calibers of these devices depend on the availability of materials and ammunition. These devices are common in countries with strict gun laws and where conventional firearms are difficult to obtain. Improvised firing devices are not only a big challenge for Forensic Firearm Examiners to examine, test fire and identify, but also to the technicians who has the challenging task of imaging the fired components from these devices into the IBIS TRAX 3D systems.

Biography: Paul J Murphy is a Distinguished Member of AFTE who is currently the Senior Firearms Technical Advisor for Forensic Technology WAI INC. He has worked for fifteen years in South Africa as Forensic Ballistic Specialist at the South African Police Services Forensic Science Laboratory. From 1996 to 1999 he was the Provincial Commander of the SAPS Eastern Cape Forensic Ballistic Laboratory. Paul also worked for seven years as a Forensic Scientist III at the Virginia Department of Forensic Science, Eastern Laboratory.

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Abstracts

Introduction to the Sporting Arms and Ammunition Manufacturers' Institute, Inc., (SAAMI)

Kenneth Green

Ken Green will present information on SAAMI as well as share with the participants two newly modified SAAMI DVD's.

As SAAMI Director of Technical Affairs, Ken is responsible for the technical activities of the American firearms and ammunition industry as well as preparation and approval of five American National Standards concerning industry standards, Ken represents the United States at international meetings on industry affairs. Ken is a technical advisor to AFTE and works closely with forensic personnel from numerous laboratories.

Smokeless Powder and the Fire Service (SAAMI DVD – 23 Minutes) This video emphasizes safety in the storage and display of smokeless powder in the retail environment and demonstrates that if appropriately packaged, smokeless powder will not explode and is less dangerous than many other common retail materials.

Sporting Ammunition and the Firefighter (SAAMI DVD – 25 Minutes) Nearly one million rounds of ammunition were subjected various tests of impact, crushing and fire. The purpose was to examine what happens to sporting ammunition when exposed to severe conditions. This video is recommended as an educational tool for fire and law enforcement departments and explains that firefighters face no danger from sporting ammunition in a fire when protected by standard turn-out gear.

Kenneth Green, SAAMI, PO Box 262, Frankfort, NY 13340 – 315.866.3506, Fax 315.866.4011, saaminy@aol.com

Firearms Recoil Dynamics

Alexander Jason

Objectives: To gain an understanding into the dynamics of firearm recoil.

Methodology: High speed imaging camera was used to capture the relative movement of bullets and firearms.

Results: Experiments showed that there is very small but measurable movement of the firearm before the bullet exits the muzzle.

Conclusions: The firearm and moving bullet do not act as a "closed system". The firearm does move in relation to the movement of the bullet. This paper shows the amount of movement and explains the physics and dynamics involved.

Biography: Alexander Jason is a Certified Senior Crime Scene Analyst specializing in the analysis and reconstruction of shooting incidents. Jason is a Fellow of the American Academy of Forensic Sciences, a member of the International Association of Bloodstain Pattern Analysts and a Technical Advisor to AFTE.

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Abstracts

When Bullets Talk – Do You Listen?

Lucien Haag

Recovered bullets routinely tell us what guns can be excluded as having fired them and much about those that could have fired them. But there are many other attributes and features present on, or imparted to fired bullets that have forensic value. These will go unnoticed and their story untold by examiners who view their role as simply that of exclusion or identification with a particular firearm.

The construction and design of a bullet are useful indicators of the manufacturer as well as the vintage of the bullet.

Its terminal ballistic behavior can provide information as to range of fire. The nature and location of impact damage as well as trace evidence inclusions all tell a story of the bullet's flight, the identity of any intermediate materials struck and the sequence of any such events. Noteworthy examples from casework over the last 40 years will be used to illustrate each of these three categories and the story each bullet offered.

Biography - Luke Haag is a former Criminalist and Technical Director of the Phoenix Crime Laboratory with over 42 years experience in the field of Criminalistics and forensic firearm examinations. He is currently an independent forensic consultant with his own company, Forensic Science Services, Inc. of Carefree, AZ.

Luke has a Bachelor of Science degree in chemistry from the University of California at Berkeley with subsequent forensic training at California State University at Long Beach, Indiana University, Arizona State University, McCrone Research Institute, the FBI Laboratory and FBI Forensic Training Facility at Quantico, VA.

He is a Distinguished Member and past-president of the Association of Firearm and Tool Mark Examiners (1985-1986), the recipient of the AFTE Key Member award on 3 occasions, a Distinguished Member of the California Association of Criminalists, a member of the Southwest Association of Forensic Scientists, a Fellow in the American Academy of Forensic Sciences and a past board member of the International Wound Ballistics Association.

He has authored and presented over 170 scientific papers, most of which have dealt with various exterior and terminal ballistic properties, effects and behavior of projectiles. He is also the author of the book Shooting Incident Reconstruction.

He has worked on a number of high-profile and historic cases including a re-examination of the evidence in the Lindbergh Kidnapping case, newly discovered evidence in the assassination of Huey Long of Louisiana, the death of Meriwether Lewis, the Randy Weaver Case in Northern Idaho, and the Bloody Sunday shootings in Londonderry Northern Ireland.

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Abstracts

Falling Bullets

Lucien Haag

Falling bullets from the reckless discharge of small arms in populated areas becomes a matter of considerable concern and discussion every New Year's Eve and 4th of July in the United States. Misconceptions and misinformation abound on the subject of falling bullets and their potential for harm.

The ballistic behavior of small arms projectiles that are truly fired vertically has been studied to some extent in the early 1900s and at least one exterior ballistics program predicts the free fall velocity of many small arms projectiles but virtually no experimental data exists to support the computer model.

An interest in the properties and consequences of vertical firings of small arms is not new. Hatcher reviewed the work and computations of military ballisticians of the early 20th century. In Chapter XX of Hatcher's Notebook ("Bullets from the Sky") he also reported on various practical efforts to document and recover returning rifle bullets fired vertically from .30 (7.62mm) to .32 caliber (7.92mm) military arms. Out of 500 rounds fired vertically from a specially built platform, only four (4) returning bullets were documented. From their impact impressions in relatively soft wood he concluded that they were falling base-first or at an angle with the base downward and that the round trip flight times were in good agreement with the previously calculated values.

The development of, and access to tracking radar systems has offered a new and unique opportunity for acquiring useful data on this frequently misunderstood subject. The sophisticated Weibel Doppler radar equipment at the U.S. Army Yuma Proving Grounds was first used in 1992 to track some vertically fired pistol bullets with limited success. The experimental design was revised in the fall of 2007 and multiple test-firings carried out in January of 2008. Pistol bullets of three calibers (9mm, .40-caliber and .45-caliber) and 7.62mm rifle bullets were fired and successfully tracked using departure angles of 30, 40, 50, 60, 70 and 80 degrees. A subsequent examination of the tracking data and the graphics produced by the Weibel system allowed the determination of maximum altitude reached, its downrange location, the time necessary to reach this altitude, the return time and downrange impact zone, the nominal free-fall velocity of the various projectiles and specific insight into their orientation during their return to earth, i.e. - nose first, base first or tumbling.

This presentation will show the experimental design and equipment used to carry out this work as well as the results for representative members from each caliber and bullet type. The data should allow members to evaluate future cases and evidence suspected of being instances of high angle gunfire or falling bullets.

(See previous Haag article for contact information)



Abstracts



City Shooting – A Complex Reconstruction

Alexander Jason

Objectives: To become familiar with the components of shooting incident reconstruction.

Methodology: This paper shows how the physical evidence of a complex shooting incident were utilized to make significant forensic determinations.

Results: An analysis of the physical evidence including fired bullets, expended cases, trace element analysis, blood spatter, and wound paths were integrated into a comprehensive analysis which provided a foundation for the determination of the decedent's body position during the bullet strikes.

Conclusions: This paper is an example of the importance of evidence collection, documentation, and analysis in shooting incident reconstructions.

(See previous Jason article for contact information)

Visualized General Rifling Characteristics File

Tsuneo Uchiyama

Objectives: General rifling characteristics files compiled by FBI is one of the most useful tools for make estimation of firearms when evidence bullets and/or cartridge cases were recovered. Matrix of Robert H. Kennington is another excellent tool. Dr. Ruprecht Nennstiel of BKA has integrated tool for make estimation. The author added a visual tool for make estimation which is specified for Japanese gun crime circumstance to reduce the number of candidates.

Methodology: To reduce the number of estimated make, the file includes statistics of number of seized guns in Japan. The images of marking impressed on expended cartridge cases of each make of guns and photos of guns are also included in the file.

Results: Simple and quick system was developed using Microsoft Excel 2007. GRC data is very powerful condition to narrow down the candidate make of firearms. This system can be upgrade easily according to circumstance of firearms often used in crime.

Conclusions: The number of estimated make of gun of an evidence bullet and/or an evidence cartridge case will increase according to expanding volume of GRC file year by year. Visual data of marking on cartridge cases and the number of seized guns are effective to reduce the number of estimated makes of guns.

Biography: The author is deputy chief of Identification Center of National Research Institute of Police Science. He was an examiner and research engineer of second mechanical section where handling firearms examination since 1973. He joined AFTE in 1985 and frequent attendee of AFTE training seminar. He received the distinguished member's Award in 1987 and the Key Person of the Year Award in 1989.

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Abstracts

Toolmark Considerations in Damaged Commercial Drug Packaging

Sergeant Gerard Dutton

Objectives: To determine if a single morphine sulphate tablet seized from a suspect was torn from a larger sheet of tablets in possession of a second suspect. Both suspects denied any association.

Methodology: The physical characteristics of the torn packaging, along with the random processes used in the manufacture of the sheets were taken into consideration before forming an opinion. These will be discussed.

Results: Both sections of packaging were formerly part of the same sheet of tablets.

Conclusions: Out of the ordinary toolmark comparisons are occasionally encountered in casework. When the class and individual characteristics are identified and assessed, along with research into the manufacture of the questioned items, reliable conclusions can often be formed as to whether there is common origin or not.

Biography: Gerard Dutton has been involved in firearm and toolmark investigation for over 21 years with New South Wales and Tasmania Police, Australia. He has had over 60 related articles published in a dozen police, forensic and other journals. He is a Distinguished AFTE member and a past recipient of the AFTE Steve Molnar Award.

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Abstracts

Establishing the Golden Images of NIST SRM Standard Bullets and Casings for Nationwide Ballistics Measurement Traceability and Quality System

Dr. John Song and others

Objectives: In response to a need by law enforcement to meet ISO 17025 standard for establishment of ballistics measurement traceability and for laboratory accreditation and assessment, NIST has developed SRM (Standard Reference Material) 2460/2461 standard bullets and casings and NIST 2D and 3D ballistics topography signature measurement system. NIST and ATF have recently proposed a joint project to establish Nationwide Ballistics Measurement Traceability and Quality System using NIST SRM 2460/2461 Standard Bullets and Casings.

Methodology: The NIST standard bullets and casings are designed as the virtual/physical ballistics signature standards. The "Golden Images", or the virtual standard, are established at the National Laboratory Center of ATF based on the best IBIS images of SRM bullets and casings. At each local IBIS laboratories, the SRM bullets and casings, or the physical standards, are routinely measured by their IBIS systems and correlated with the "Golden Images". The IBIS correlation scores are statistically analyzed for determining the measurement repeatability of the IBIS systems, and the short and long term measurement reproducibility in each laboratory. From the statistic analyses, a NIST developed "Dynamic Control Chart" with both the Fixed and the Dynamic Control Limits is used for establishment of measurement traceability to ATF, and for nationwide ballistics measurement quality control and laboratory accreditation and assessment.

Results: Up to date 35 SRM bullets have been delivered. A set of Golden Images for SRM bullets has been established at ATF. 27 prototype SRM casings are developed and have completed IBIS correlations at the NIST workshop held on Jan. 8th, 2008 in Largo, FL. A statistical analysis is currently in progress for developing the Golden Images of SRM casings. 250 SRM casings are scheduled for delivery in 2008. A NIST/ATF joint project entitled "Establish Nationwide Ballistics Measurement Traceability and Quality System Using NIST Standard Bullets and Casings" has been proposed. The 35 SRM bullets have been delivered [to the NIST SRM office for sale](#).

Conclusions: The Golden Images can be used as a reference standard (virtual standard), combined with the use of the NIST SRM 2460/2461 standard bullets and casings (physical standard) for establishment of the Nationwide Ballistics Measurement Traceability and Quality System, and for promoting nationwide, even international, ballistics laboratory accreditation and assessment in accordance with the ISO 17025 standard.

Biography: J. Song, Project Leader, NIST SRM 2460/2461 Standard Bullets and Casings Project. Ballou, Program Manager, Office of Law Enforcement Standards (OLES) of NIST, B. Renegar, Senior Technician, Precision Engineering Division (PED) of NIST, A. Zheng, Engineering Student (PED), NIST, R. Silver, Acting Group Leader, Surface and Microform Metrology Group, PED, NIST, T. Vorburger Acting Deputy Director, Center of Nano-scale Science and Technology (CNST) of NIST, M. Ols, Ballistics Examiner, National Laboratory of ATF.

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Abstracts



Release of NIJ Sponsored AFTE Media Based Training Program

Dr. Katy Savage

The National Institute of Justice (NIJ) contracted with the National Forensic Science Training Center (NFSTC) in Largo, Florida to develop a web based training program for firearms examiners. Several AFTE members were involved in assisting NFSTC develop this program. The NIJ is officially releasing the program for use within the forensic science community.

Dr. Katy Savage, NFSTC, 7881 114th Avenue North, Largo, FL 33773, 727.549.6067, Fax 727.549.6070, Kathleen.Savage@nfstc.org



Wednesday, May 21st



Morning Moderator: Lucien Haag
Afternoon Moderator: Pete Striupaitis

Location: Hibiscus Ballroom I

- 7:00 a.m. Registration**
- 8:00 a.m. General Announcements**
2008 Host Committee
- 8:05 a.m. The Effects of Geometry of Force on Trigger Pull Measurements**
Garry Lawrence, Centre of Forensic Science, Toronto, CANADA
- 9:05 a.m. Case Study: Homemade, Compressed Air Powered, Multiple Arrow Launcher**
Garry Lawrence, Centre of Forensic Science, Toronto, CANADA
- 9:35 a.m. BREAK**
Garden Lanai – Exhibitor Area
- 10:00 a.m. The ENFSI Expert Working Group (EWG) Firearms/GSR**
Dr. Walter Wenz, Bundeskriminalamt, Wiesbaden, GERMANY
- 10:15 a.m. EVOFINDER – A Really Useful System for Firearms Examiners**
Dr. Walter Wenz, Bundeskriminalamt, Wiesbaden, GERMANY
- 10:35 a.m. The Cast Breech Block of a SIG-SAUER Mosquito Pistol and Its Effect on Cartridge Case Identifications**
Stephen M. Ostrowski, MS, NH State Police Forensic Laboratory, Concord, NH, USA
- 11:05 a.m. Bullet Trajectory Demonstration – A Graphical Presentation**
Paula M. Ernst, PE, FBI Special Projects Unit, Quantico, VA, USA
- 11:45 a.m. LUNCH**
Buffet line in Foyer with seating in Garden Lanai and Hibiscus Ballroom II
- 1:00 p.m. General Announcements**
2008 Host Committee
- 1:05 p.m. Less-Lethal Impact Munitions – Comparison of Human Analogs vs. Live Subjects**
R.T. Wyant, MS, Washington State Patrol, Seattle, WA, USA
- 1:35 p.m. The Vortex Effect**
Evan Thompson, BS, Arizona DPS Crime Lab, Flagstaff, AZ, USA
(Presented by R.T. Wyant, MS, Washington State Patrol, Seattle, WA, USA)
- 2:05 p.m. Blind Verification Models for Firearms-Toolmark Examinations**
Erich D. Smith, FBI Laboratory, Quantico, VA, USA
- 2:35 p.m. BREAK**
Garden Lanai – Exhibitor Area
- 3:00 p.m. Business Process Management in Forensic Science**
Dom Denio, Tri-Lucem Consulting LLC, Fredericksburg, VA, USA



Wednesday, May 21st



- 3:45 p.m. Firing Pin Impression Depth & Volume Measurements**
Jason Butell, B.S., Sedgwick County Regional Forensic Lab, Wichita, KS, USA
- 4:05 p.m. 2008 SWGGUN Overview**
Greg Klees, SWGGN Chairman, ATF National Lab, Ammendale, MD, USA
- 4:25 p.m. Physical Matching as Duties of a Firearms and Toolmark Examiner**
Jaco Swanepoel, Forensic Analytical Services, Hayward, CA, USA
- 4:55 p.m. General Announcements**
2008 Host Committee
- 5:00 p.m. End of Daily Technical Program**

Evening Schedule

- 6:00 p.m. to 8:00 p.m. Ammunition Identification and CartWinPro** *Plumeria*
Axel Manthei, CartWinPro, Munchen, GERMANY
- 6:00 p.m. to 9:00 p.m. Barrel Manufacturing** *Pakalana*
Allan Offringa, retired ATF
Sponsored by: Savage Range Systems



Abstracts

The Effects of Geometry of Force on Trigger Pull Measurements

Garry Lawrence

Objectives: To optimize trigger pull procedure by determining whether it should be conducted by pulling the trigger a) parallel to the bore axis (NRA style), b) at an angle to bore axis, or c) both techniques.

Methodology: For each gun, two sets of data were collected. By the NRA protocol, ten measurements were collected by pulling the rod on the digital gauge parallel to the bore axis of the firearm.

The second set of data, that is, the Natural grip pulls, are collected by first assuming a natural grip on the long gun. However, this step may be subjected to variability due to the inherent, random manner in which a person may hold onto the hand grip each time. Therefore, the angle of the trigger finger to the bore axis may be slightly different each time.

Results: The Hypothesis that the Natural grip method would generate higher trigger pull values due to the natural angle imposed on the trigger finger by the hand grip of long guns was not always correct.

Conclusions: That the existing procedure in conducting trigger pulls be updated to include both parallel (NRA) and that an angle to the bore axis (Natural Grip).

Biography: Garry Lawrence started working as a Firearm and Toolmark Examiner In Vermont. In 2003 he accepted a position with the Centre of Forensic Sciences, Toronto Ontario, Canada where he continues to work.

Holly Lee was a student at the University of Toronto at Mississauga during this research. She performed her internship at the Centre of Forensic Sciences under the mentorship of Garry Lawrence.

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Case Study: Homemade, Compressed Air Powered, Multiple Arrow Launcher

Garry Lawrence

The Firearms and Toolmarks Section of the Centre of Forensic Sciences routinely examines various homemade devices to determine whether or not they constitute a firearm as defined by the Criminal Code of Canada, in support of the investigation and prosecution of weapons offences in the province of Ontario, Canada.

This presentation will detail the examination and features of an interesting homemade, compressed air powered, multiple arrow launcher. The item was examined to determine its function and classification under Sections 2 and 84 of the Criminal Code of Canada. This presentation will also describe the velocity and energy testing conducted and the results generated to assist in the classification of the item.

(See previous Lawrence article for contact information)



Abstracts



The ENFSI Expert Working Group (EWG) Firearms/GSR

Dr. Walter Wenz

Objectives: ENFSI - European Network of Forensic Science Institutes - has been established in October 1995, with the purpose of sharing knowledge, exchanging experiences and coming to mutual agreements in all fields of forensic science. ENFSI is recognized as an expert group in the fields of forensic science. 16 independent forensic expert working groups have been established. This introduction of the EWG Firearms/GSR should initiate a co-operation between ENFSI and AFTE in our field of forensic investigations.

Results: The presentation is supposed to give an overview of the history of the EWG Firearms/GSR, its organization, objectives and a way to co-operate.

Conclusions: Presentation of the next venue: Annual Meeting 2008 in Dubrovnik, Croatia

Biography: Dr.-Ing. Walter Wenz, born 1946, PhD in Chemical Technology, 12 years experience in the chemical industry. Since 1983 at the forensic science institute of the BKA, Germany. Head of the subdivision KT2 -Firearms/Toolmarks/GSR.

Member of DGRM (German Society for Legal Medicine). Since 2004, Chairman of the ENFSI expert working group on Firearms /GSR. www.enfsi.eu

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Abstracts

EVOFINDER – A Really Useful System for Firearms Examiners

Dr. Walter Wenz

Objectives: Automated ballistic comparison systems for firearm identification will never reach a similar performance as DNA or fingerprint identification. But the existing systems haven a potential for improvements. Enhanced image quality allows a qualified trace comparison for bullets and cartridge cases on the computer screen, that help to preselect results from the hit list. The preselection should exclude as many candidates from the hit list as possible in order reduce the efforts for manual comparison at the microscope.

Methodology: EVOFINDER ballistic information system is presented, that - based on 2D-Images - demonstrated a high level of performance in correlation and on-screen comparison.

Results: The EVOFINDER combines all relevant features of a ballistic comparison system:

- Good image quality
- User-independent quality of input
- Qualified on-screen comparison
- Structured comparison database
- Good correlation results

Based on these properties EVOFINDER deserves recognition in the market.

Conclusions: After six years of testing during system development, the BKA has finally established EVOFINDER in casework.

(See previous Wenz article for contact information)



Abstracts

The Cast Breech Block of a SIG-SAUER Mosquito Pistol and Its Effect on Cartridge Case Identifications

Stephen M. Ostrowski

Objectives: This is a case study in which an examination was trying to determine whether three discharged .22 LR cartridge cases were indeed discharged in a particular SIG-SAUER Mosquito pistol. Breech face marks are often utilized to effect an identification of a discharged cartridge case as having been fired in a particular firearm. The amount of weight put on this set of toolmarks greatly depends on how that particular tool was manufactured.

Methodology: During initial examination of a SIG-SAUER Mosquito pistol, it was noted that the breech face appeared cast. SIG-SAUER in Exeter, NH was contacted to ascertain about the various manufacturing techniques for this model. It was discovered that SIG-SAUER is only the marketing company and that the pistol had been manufactured by German Sports Guns (GSG) under contract from JP Sauer. While receiving some mixed information, it was eventually determined that the entire breech block, to include the breech face, were fabricated using the metal injection molding (MIM) process. It was also determined that the breech face was not tooled post-fabrication.

Results: It could not be determined whether the characteristics transferred onto the cartridge cases by the cast breech face surface were individual to that piece or whether these were sub-class characteristics imparted onto the piece by the mold. Since the breech face marks could not be trusted due to their potential as sub-class characteristics, other toolmarks had to be utilized. Identification of the cartridge cases as having been discharged in the Mosquito pistol were affected using the firing pin impressions from the stamped and milled firing pin.

Conclusions: The findings in this case support the theory that a firearms examiner should always examine the internal surfaces of a firearm to determine the manufacturing techniques used to make particular components. It also sends a cautionary warning to those examiners who identify cartridge cases using only breech face marks without having the firearm. It is the intent of the speaker to obtain three MIM fabricated breech blocks from the same mold that are not tooled post-fabrication for additional testing.

Biography: Steve Ostrowski is a firearms and toolmarks examiner with the New Hampshire State Police Forensic Lab. He has earned a Bachelor of Science degree in Biology from Dickinson College and a Master of Science degree in Forensic Science from the University of New Haven. Steve is a provisional member of AFTE and is certified in the areas of Firearms, Toolmarks, and Gunshot Residue/Distance Determination. He was a member of the AFTE 2006 Host Committee and is currently serving on the AFTE Website Review Committee (Ad Hoc).

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Abstracts



Bullet Trajectory Demonstration – A Graphical Presentation

Paula M. Ernst, PE

Outline of Objectives: To show case samples of how the FBI Laboratory documents and illustrates bullet trajectory data, especially in vehicles.

Brief Methodology: The Special Projects Unit works closely with the Firearms and Toolmarks Unit within the FBI Laboratory. SPU uses grids, total stations and lasers as measuring devices to document the trajectory data.

Summary of Results: The FBI Laboratory produces two and three dimensional computer graphics for report and court room presentation. Case examples include the death of a Border Patrol Agent in Kona, Hawaii and the death of Officer Aubrey Hawkins by the Texas Seven fugitives.

General Conclusions: The documentation of bullet trajectories can be compiled into compelling graphics, easily understood by a jury.

Biography: Paula Ernst is a licensed Professional Engineer and is employed as a Forensic Engineer by the Federal Bureau of Investigation Laboratory Division. Prior to her tenure with the FBI, Ms. Ernst was employed as an Accident Reconstructionist in Connecticut.

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Abstracts

Less-Lethal Impact Munitions - Comparison of Human Analogs vs. Live Subjects

R. T. Wyant

Objectives: To determine if current forensic human analogs (10% ballistic gelatin and Maki Ballistic Media) are comparable to wounds observed on the human body when struck with less lethal impact munitions (bean bag, sponge rounds).

Methodology: Several Less-lethal rounds of the varying types type were fired into bare and covered (denim, neoprene) 10% gelatin and Maki ballistic media. Intrusion and disruption of the media were documented and measured to determine a profile of wound and lethality potential. These profiles were compared to actual wounds generated when applying these rounds to the thighs of the same human subject.

Results: Both the gelatin and the MBM provided a solid foundation for intra-comparison between Less-lethal rounds in regard to wound and lethality potential. Several characteristics observed on the media were consistent with the wounds observed in the human subject.

Conclusions: During controlled and consistent testing, the intrusion and disruption characteristics observed when firing less-lethal impact munitions into both 10% gelatin and Maki ballistic media may provide a basis to predict the outcome of less-lethal impact munitions when applied in the field.

Biography: Rick Wyant has been a forensic scientist since 1995, currently employed by the Washington State Patrol Crime Laboratory, Seattle. He obtained his Bachelor's and Master's of Science degrees from Colorado State University in 1993 and 1994. During his career, Rick has testified as an expert witness over 100 times. Rick is an associate member of the American Academy of Forensic Sciences (AAFS.ORG). He is a distinguished member of the Association of Firearm and Toolmark Examiners (AFTE.ORG), where he serves on the Research and Development Committee. For several years, Rick has served as a member on the FBI's SWGGUN (Scientific Working Group for Firearms and Toolmarks SWGGUN.ORG) board and the NIJ TWG (Technical Working Group) for Less-Lethal. He is also an instructor for the National Firearms Examiner Academy (NFEA).

Rick began researching and evaluating Less-Lethal tools for law enforcement in 2001 along with two police officers. We have performed extensive forensic testing on electronic control devices and other Less-Lethal systems. Rick has presented scientific papers on forensic testing to numerous law enforcement and forensic groups in the US and abroad.

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Abstracts

The Vortex Effect

Evan Thompson (Presented by R. T. Wyant)

Objectives: To determine what was the cause and effect of a spiral gunshot residue pattern deposited at close ranges.

Methodology: Several handgun calibers of Independence and Winchester brand ammunition as well as representative firearms having conventional rifling, both right and left hand twist and polygonal rifling and different target materials were used to determine what the underlying cause of the Vortex Effect was. Testing was conducted indoors and at the Yuma Proving Grounds (YPG).

Results: Construction of the bullet jacketing allowed for the conventional rifled barrels to cut through the jacketing, causing a spray of lead to escape and deposit itself as a spiral pattern at close ranges. This was documented by high speed video done at the Yuma Army Proving Grounds.

Conclusions: This phenomenon could allow the examiner to determine the number of lands and grooves, the direction of barrel twist, muzzle to target distance and possible brand of bullet used in a shooting.

Biography: Author is a distinguished member of AFTE with over twenty years in the field of Firearms and toolmark identification.

Evan Thompson, Arizona Department of Public Safety, 1140 West Kaibab Lane, Flagstaff, AZ 86001, 928.773.3642, Fax 928.773.3665, ethompson@azdps.gov

Blind Verification Models for Firearms-Toolmark Examinations

Erich D. Smith

This presentation will examine Blind Verification Models for use during forensic Firearms-Toolmarks examinations. The topics covered will include how these models work in a Quality Assurance System, examiner bias and potential error rates.

Biography: Mr. Smith is a Firearms-Toolmarks examiner for the FBI Laboratory, where he has been employed for the last ten years; he is an ASCLD/ISO-International assessor, serves as an instructor for the FBI Laboratory's Scientific Techniques in Firearms Identification and Shooting Incident Response schools, and serves as the quality assurance program manager for FBI Laboratory Firearms-Toolmarks Unit. Prior to coming to the FBI Laboratory, Mr. Smith worked for the Virginia Division of Forensic Science.

Erich D. Smith, Firearms-Toolmarks Examiner, FBI Laboratory, 2501 Investigation Parkway, Quantico, VA 22135, 703.632.7242, Fax 703.632.7227, erich.smith@ic.fbi.gov



Abstracts



Business Process Management in Forensic Science

Dom Denio

Objectives: This presentation will provide information on the use of Business Process Management (BPM) in Forensic Science. BPM is a holistic approach using Value Stream Management (VSM) to identify the seven forms of waste, utilize automation to provide visibility and Organization Development to achieve greater productivity within an organization.

Results: Attendees will have a greater understand of BPM and VSM as they are related to Forensic Science.

Conclusions: Attendees will see a different prospective of work as a process that are composed of sub processes, activities and tasks.

Biography: Dom Denio is a past AFTE President, retired New York State Trooper and owner of several Model T Fords (1915-1919) who is working with the Tri-Lucem Consulting Group.

Dominic Denio, Tri-Lucem Consulting LLC, 10970 Pierson Drive, Fredericksburg, VA 22408, 877.405.4774 X3, ddenio@trilucem.com



Abstracts



Firing Pin Impression Depth & Volume Measurements

Jason Butell

Objectives:

- -Historical use of FPI depth measurements
- -Attain reliable measurements of FPIs
- -Remain ASCLD/LAB & ISO Accredited compatible
- -Utilize measuring device that is economically available
- -Compare FPIs from various types of firearms in both double & single action
- -Glean FPI depth & volume in metric & US Customary units
- -Importance of these measurements

Methodology: By following the Scientific Method and utilizing the Keyence VHX-600 digital microscope to measure FPI depth and volume. Both a revolver and semi-automatic pistol are used for the experiment, and both discharged in single and double action. These measurements are tabulated for comparison and examination of possible errors, differences and to test if hypothesis is true or false.

Results: On a small scale the test indicates that there are differences in the depth and volume of FPIs in both the revolver and semi-automatic pistol regarding whether single action or double action was used.

Conclusions: The advent of newer technology brings to light finer details that were once not as attainable or feasible. This also allows for further documentation of once excluded information, while maintaining laboratory standards. However, this will be an ongoing experiment in an attempt to gather as much information as possible.

Biography: Currently finishing FA/TM apprenticeship with AFTE dinosaur Gary Miller Prior to this, a Medico-Legal Death Investigator with the Sedgwick County Regional Forensic Science Center, a Crime Scene Investigator with Wichita Police Department, and a Police Officer with Georgetown Police Department in Texas. Bachelor of Science in Biology from Kansas State University

Jason Butell, Sedgwick County Regional Forensic Science Center, 1109 North Minneapolis, Wichita, KS 67214, 316.660.4800, Fax 316.383.4535, jbutell@sedgwick.gov



Abstracts

2008 SWGGUN Overview

Greg Klees

Objectives: This is an informational update on the Scientific Working Group for Firearm & Toolmarks (SWGGUN). The presentation will include a brief history of the working group, current Board Members, objectives, committees, and the documents/guidelines approved and available for peer review.

Biography: Greg Klees is a firearms & toolmark examiner from the ATF national laboratory center in Ammendale, Maryland (just outside Washington, DC). He has been a firearms & toolmark examiner at ATF for 12½ years. Before coming to ATF, Greg worked in the firearms & toolmark unit of the FBI laboratory for over 17 years. For five years, he was on the developmental committee for the ATF National Firearms Examiner Training Academy where he was a resident instructor for seven years. Greg is presently a member of the scientific working group for firearms and toolmarks (SWGGUN) where he is the newly elected chairman of the board. Greg is a member of the American Academy of Forensic Sciences, the Association of Firearms and Tool Mark Examiners, the Midwest Association of Forensic Scientists and the International Association of Automobile Theft Investigators.

Greg Klees, ATF National Laboratory, 6000 Ammendale Road, Ammendale, MD 20705, 240.264.3852, Fax 240.264.1491, greg.klees@atf.gov

Physical Matching as Duties of a Firearms and Toolmark Examiner

Jaco Swanepoel

Objectives: To establish through physical matching and microscopical comparison if the hydraulic pump and the base plate which it was mounted on were in contact with each other.

Methodology: Side by side and microscopical comparison of the specific areas of contact between the hydraulic pump and the base plate, several different Microsil and forensic sil casts were made to assist and facilitate the various photographic and microscopical comparisons. A strong light source at various angles of incident also enhanced certain class and individual characteristics.

Results: Through comparison sufficient class and individual characteristics were identified to make a conclusion possible.

Conclusions: The base plate and the hydraulic pump were joined to each other for a sufficient amount of time to ensure the mutual carry over of sufficient class and individual markings / characteristics.

Biography: Jaco Swanepoel is a Senior Forensic Scientist with specialties in firearms and toolmark examination, fingerprint collection, interpretation and identification, crime scene investigation, crime scene reconstruction and crime scene photography. He began his career as a Forensic Scientist with the Crime Scene Investigation Division of the South African Police Service in 1988 and was subsequently assigned to the Ballistics Section of the South African Police Service Forensic Science Laboratory in 1999.

Jaco Swanepoel, Forensic Analytical Sciences, 2777 Depot Road – Ste 409, Hayward, CA, 94545, 510.266.8145, Fax 510.887.4451, jswanepoel@forensica.com



Thursday, May 22nd



Morning Moderator: Ronnie Freels
Afternoon Moderator: Dave Brundage

Location: Hibiscus Ballroom I

- 7:00 a.m. Registration**
- 8:00 a.m. General Announcements**
2008 Host Committee
- 8:05 a.m. Tales from the Bench: Intriguing Cases from 2007**
Charles Clow, Southwestern Institute of Forensic Sciences, Dallas, TX, USA
- 8:35 a.m. ASCLD/LAB Accreditation Updates**
Glen Johnson, ASCLD/LAB Training Division, Garner, NC, USA
- 9:20 a.m. Wound Ballistics 2008 'Looking Forward Looking Back'**
David Andrew, MScN, Beri Hospital, Beri South Australia, AUSTRALIA
- 9:35 a.m. BREAK**
Garden Lanai – Exhibitor Area
- 10:00 a.m. Visualization of Gunshot Residue Patterns on Dark Clothing Using a Video Spectral Comparator**
John Durina, San Diego PD Crime Laboratory, San Diego, CA, USA
Marie Durina, San Diego PD Crime Laboratory, San Diego, CA, USA
- 10:45 a.m. Gunpowder Visualization by Digital Infrared Photography**
William Matty, San Bernardino County Sheriff's Lab, San Bernardino, CA, USA
- 11:05 a.m. The Antwerp Massacre and the Consequences for a Small Country**
Dr. Jan De Ceuster, National Institute of Criminology, Brussels, BELGIUM
- 11:35 a.m. Final Results of the Worldwide 10 Consecutive Barrel Research Project**
Dr. James E. Hamby, International Forensic Science Laboratory & Training Centre, Indianapolis, IN, USA
- 11:45 a.m. LUNCH**
Buffet line in Foyer with seating in Garden Lanai and Hibiscus Ballroom II
- 1:00 p.m. General Announcements**
AFTE 2008 Host Committee
- 1:05 p.m. Daubert Presentation**
Moderator: Brandon Giroux, FBI Laboratory, Quantico, VA, USA
Panel Members: Dr. Stephen Bunch, Douglas Murphy, John Webb, Erich Smith – FBI Laboratory, Quantico, VA, USA
- 3:00 p.m. Continuation of AFTE Business Meeting (As Required)**
- 4:00 p.m. End of Technical Session**



Thursday, May 22nd



Evening Schedule

6:00 p.m. to 7:00 p.m.	AFTE 2008 Pre-Banquet Reception	<i>Hibiscus Ballroom I & II</i>
7:00 p.m. to 10:30 p.m.	AFTE 2008 Banquet Dinner	<i>Hibiscus Ballroom I & II</i>



Abstracts

Tales from the Bench: Intriguing Cases from 2007

Charles Clow

Objectives: This presentation gives accounts of two interesting cases worked in the past year. The first details a homicide case in which the presence of numerous magazine marks led to the identification of all fired bullets and cartridge cases to a single unknown firearm. The second details a homicide case that occurred in 2000. Reloading marks present on an unfired cartridge, placed the suspect at the scene of the crime.

Biography: Charles M. Clow has worked as a Firearm & Toolmark Examiner for the Southwestern Institute of Forensic Sciences in Dallas, Texas for the past six years. He is a graduate of the National Firearm Examiner Academy (NFEA) Class of 2003, a board member of the Scientific Working Group for Firearms & Toolmarks (SWGUN), a Distinguished Member of AFTE and serves on the AFTE Technical Procedures Manual (Chair), Historical, and Ethics/Governing Documents Review Committee.

Charles M. Clow, Southwestern Institute of Forensic Sciences, 5230 Medical Center Drive, Dallas, TX 75235, 214-920-5977, Fax 214-920-5813, cclow@dallascounty.org

ASCLD/LAB Accreditation Updates

Glen Johnson

Objectives: This presentation will provide interesting and useful information for the Firearm/Tool Mark discipline with regards to the ASCLD/LAB accreditation programs. The presentation begins with an overview of the 25-year history of the ASCLD/LAB organization including statistical data on the number of accredited laboratories. Differences between the Legacy Program and the International Program will be presented, and improvements incorporated into the 2008 Legacy Program Manual will be outlined. Significant ISO-17025:2005 and 2006 Supplemental requirements of concern for firearm and tool mark examiners will be reviewed.

Biography: Glen Johnson is currently an ASCLD/LAB Staff Inspector and Certified Lead Assessor. He has participated in more than fifty ASCLD/LAB accreditation inspections and assessments since 1990. He is a life member of AFTE, a certified gunsmith, a recipient of the Tony Longhetti ASCLD/LAB award for excellence, a member of the AFTE Accreditation Committee and a retired firearm and tool mark examiner and system manager, formerly with the Texas Department of Public Safety.

Glen Johnson, ASCLD/LAB Training Division, 139J Technology Drive, Garner, NC 27529, 512.255.5382, Fax 919773.2602, JohnsonCG@aol.com



Abstracts



Wound Ballistics 2008 'Looking Forward Looking Back'

David Andrew

Objectives: Wound Ballistics is a science driven by need. The current conflicts in the Middle East have given a new impetus. 'Mythbusters' and the gratuitous use of ballistic gelatin have also helped. This paper looks at what we have learned and how it could be used in the future.

Methodology: A literature and media review was undertaken. This was then analyzed and evaluated.

Results: Old lessons are being relearned, and a lot of information is again resurfacing on energy transfer. Bullets are getting bigger, and blast injury is becoming the focal point.

Conclusions: A new definition of Wound Ballistics, "A Study of Bombs, Bullets and Blast upon the Body". The design of Body Armour is being evaluated under these principles, bullets are getting bigger, and blast is a major focus area.

Biography: David Andrew is a Registered Nurse at Berri Hospital in South Australia, and a Lieutenant in the Australian Army Reserve. He holds a Masters of Nursing Degree and has served in the Australian Defense force in various roles for over 32 years. He has presented in this field for over 20 years and presented at AFTE in 2006.

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Abstracts

Visualization of Gunshot Residue Patterns on Dark Clothing Using a Video Spectral Comparator

John Durina and Marie Durina (and others)

Objectives: The determination of muzzle-to-target distance is often a critical factor in criminal and civil investigations involving firearms; however, seeing and recording gunshot residue patterns can be difficult if the victim's clothing is dark and/or bloody. The Video Spectral Comparator (VSC) is an imaging instrument routinely used by forensic document examiners. The VSC 2000™ model (Foster & Freeman Ltd, Evesham, Worcestershire, UK), includes a color charge coupled device (CCD) video camera, a black and white CCD video camera, various radiant energy sources, and numerous excitation/barrier filters.

This research set out to determine if the VSC could quickly, easily, and reliably provide instantaneous viewing, saving, and printing of gunshot residue patterns on dark and bloodstained clothing without the use of specialized film, and without chemical processing.

The study examines the reliability, speed, and accuracy of determining muzzle-to-target firing distance from gunshot residue particle patterns using the Video Spectral Comparator 2000 (VSC) 2000. Examinations included (a) the use of the VSC 2000 to detect gunshot residue particles on dark clothing, and; (b) what effect the addition of blood to the materials may have in making firing distance determinations using the VSC 2000.

Methodology: Five different types of dark clothing using eight different handguns of different calibers were examined. Test fires were made on dark colored fabrics at three muzzle-to-target distances of 6 inches, 12 inches, and 18 inches. Test fires into white, unstained, cotton fabrics at 6 inches were used as controls. The target fabrics were then viewed with a Video Spectral Comparator. After results were obtained, some of the fabrics were then stained with human blood from crime lab stock supplies. The target fabrics were then viewed again with the Video Spectral Comparator. Images of results were recorded.

Results: Gunshot residues were readily detected, and patterns were easily seen on dark clothing. Bloodstains did not preclude the viewing of these patterns.

Conclusions: This study has determined that the Video Spectral Comparator (VSC) can assist firearms examiners in quickly and easily visualizing gunshot residue patterns without any specialized film, or chemicals, and with instantaneous viewing, saving, and printing of the image. Video Spectral Comparators already exist in many crime labs and are used frequently by forensic document examiners. The VSC is also a useful tool for examining gunshot residue patterns and determining muzzle-to-target firing distances.

Biography: Christina Atwater graduated from National University, San Diego, CA in 2005 with a master's degree in forensic science. Marie Durina is a Forensic Document Examiner with the San Diego Sheriff's Crime Laboratory Questioned Document Unit, San Diego, CA. John Durina is a Criminalist in the Firearms Unit of the San Diego Police Department Laboratory, San Diego, CA. Robert D. Blackledge is a retired Senior Chemist, formerly with the Naval Criminal Investigative Service Regional Forensic Laboratory, San Diego, CA, and an adjunct professor of Criminalistics with National University, San Diego, CA.

John Durina and Marie Durina, Christina Atwater, Robert Blackledge, c/o of Marie Durina, San Diego Sheriff's Department Crime Lab, 5255 Mt. Etna Drive, San Diego, CA 92117, 858.467.4591, Fax 858.467.4650, marie.durina@sdsheiff.org



Abstracts

Gunpowder Visualization by Digital Infrared Photography

William Matty

Objectives: To assess the capabilities of new digital camera technology, this is optimized to capture infrared light. These cameras can detect and enhance gunpowder patterns on cloth.

Methodology: Several different fabrics of differing colors and patterns were photographed under varying light conditions in order to determine optimum photographic conditions to enhance gunpowder pattern visualization.

Results: Depending on the type of dye used, the use of infrared photography can enhance the ability to see the gunpowder pattern to a remarkable degree.

Conclusions: Infrared photography is a very useful tool for the detection and recording of gunpowder patterns on cloth which has a dark color or a colored pattern.

Biography: William Matty has over 30 years experience in field of Firearms Examination and general Criminalistics. He has worked for the California Department of Justice Crime Lab system and currently works for the San Bernardino County Sheriff/Coroner Crime Lab of the Firearms Unit.

William Matty, San Bernardino County Sheriff, 200 S. Lena Rd, San Bernardino, CA 92415 909 387 2200, 909 387 2688, wmatty@sbcscd.org

The Antwerp Massacre and the Consequences for a Small Country

Dr. Jan De Ceuster

Objectives: In 2006, a young guy created a massacre in the Old Town of Antwerp, killing two persons and severely wounding a third one. These murders had tremendous influence on the whole of the country; the people were in shock. It was the first trial in Belgium where the accused was eventually convicted for murder with racist motives. Also, in the aftermath of these murders, the Belgian firearms legislation was rapidly changed by the government.

Methodology: The audience will be given an overview of what happened on that particular day and what happened in the days following the crime. The ballistic investigation included a study of the terminal ballistics of the .30-30 bullet. The surviving victim was shot through a mammary implant, which could have saved her life.

Results: 1. An overview of the current Belgian firearms legislation is given. Up to date this law is still not fully applicable. 2. Using ballistic soap and gelatine, the influence of a mammary implant was shown to reduce importantly the wound cavity behind. High-speed video enabled us to study the temporary cavity in ballistic gelatine, which confirmed the results of the ballistic soap.

Biography: I have a PhD in science (physics) and have been working at the NICC for 5 years as a firearm and toolmark Examiner. This is my 4th AFTE Meeting and I have been a provisional member of AFTE since 2007.

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Abstracts

Final Results of the Worldwide 10 Consecutive Barrel Research Project

Dr. James E. Hamby (and others)

Abstract: Ten consecutively rifled Ruger P-85 pistol barrels were obtained and then test fired to produce known test bullets and 'unknown' bullet for comparison by firearms examiner's from around the world. This study is a continuation of one originally designed and reported on by David Brundage – then the Firearms Training Coordinator for the Illinois State Police. The original study was limited to examiners from nationally accredited laboratories and we wanted to expand the study to provide test sets for firearms examiners around the world. The Ruger P-85 pistol, and the 10 consecutively rifle barrels were borrowed from the Illinois State Police ammunition obtained from Winchester Ammunition Company, and 240 sets produced and distributed.

To date, some 441 examiners from 18 countries worldwide have examined the bullet test sets. Every examiner used conventional optical microscopy to conduct their examinations and reported their findings. An additional 5 examiners used various ballistics imaging systems to evaluate the bullet test sets. An error rate was developed and will be discussed during the presentation.

James E. Hamby, Ph.D., International Forensic Science Laboratory & Training Centre, 2265 Executive Drive, Indianapolis, IN 46241, 317.508.9014, jimhamby14@aol.com

Daubert Presentation

Moderator: Brandon Giroux

Panel Members: Dr. Stephen Bunch, Douglas Murphy, John Webb, Erich Smith

Objectives: The Daubert presentation will begin with a Daubert PowerPoint Presentation. The audience will then have the opportunity to ask questions to a panel of FBI and ATF examiners regarding the admissibility of firearms and toolmarks evidence.

As the moderator, Brandon Giroux will allocate appropriate time to the specific areas of presentation which will include the following:

Daubert Question and Answer Session

Introduction of panel members and Daubert presentation by Brandon Giroux, question and answer session, NAS Report by Greg Klees, discussion on the prongs of Daubert by various panel members as shown below, followed by a final question and answer session.

- Peer Review and Publication (John Webb and Doug Murphy)
- General Acceptance (John Webb and Erich Smith)
- Testability (Stephen Bunch and Greg Klees)
- Error Rate (Doug Murphy and Stephen Bunch)
- Maintenance of Standards and Controls (Erich Smith and Greg Klees)

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Friday, May 23rd



Schedule of Workshops

8:00 a.m. to 5:00 p.m.	Source Tool Recognition: Identification Approach for Cartridge Case Comparison – Part II Beta Tam, Formerly of LAPD Crime Lab, Los Angeles, CA, USA	<i>Plumeria</i>
8:00 a.m. to 4:00 p.m.	Basics of Firearms Mechanisms Robert Caunt, Vancouver PD Crime Lab, Vancouver, BC, CANADA	<i>Carnation</i>
8:00 a.m. to noon	Integrity, Character and Ethics in the Forensic Sciences Dan Gunnell, Illinois State Police, Joliet, IL & William Demuth, Illinois State Police, Chicago, IL, USA	<i>Anthurium</i>
1:00 p.m. to 5:00 p.m.	Critical Decision Making Dan Gunnell, Illinois State Police, Joliet, IL & William Demuth, Illinois State Police, Chicago, IL, USA	<i>Anthurium</i>



Workshops

Source Tool Recognition Identification Approach (STRIA) for Cartridge Case Comparison – Part I

Instructor: Beta Tam

This two day workshop is designed to provide some ideas to the firearm examiner to articulate how and why identification could be formed. The workshop will include some practical exercises and reading materials. The following is an outline of the workshop:

- Introduction
 - Metallurgy & Mechanical Engineering concepts related to cartridge case identification
 - The Source Tool Recognition Identification Approach
- Tool Marks on Firearms
- Tool Marks on fired cartridge cases
 - Non Firing Marks
 - Firing Marks
- How marks are made on Fired Cartridge Cases
- Variations in Firing Marks
- Subclass Characteristics
- Discussion on Interpretation of Significant Agreement of the Identification Theory

Trajectory Reconstruction & 3D Scanning

Instructor: Lucien Haag, Forensic Science Services, Carefree, AZ, USA

Presentation and demonstration by: Tony Grissim, Leica Geosystems

Trajectory equipment provided by: Dick Rogers, Forensics Source

This workshop serves as an introduction to proper trajectory measurement for newcomers, as well as a refresher for experienced examiners. Topics to be covered include, but may not be limited to:

- The use of basic trajectory tools (rods, lasers, string, protractors, inclinometers)
- The use of advanced tools (3D laser scanning with demonstrations and case examples)

This class will also use hands-on trajectory measurements by students as a method of analyzing the accuracy and precision of trajectory measurement.

Barrel Manufacturing

Instructor: Allan Offringa, retired ATF

Sponsored by: Savage Range Systems, Westfield, MA, USA

The following topics will be covered:

- Broach cutting
- Hammer forging
- Button rifling
- Chambering
- Crowning
- Reaming



Workshops

GSR Analysis: Interesting Scenarios & Problems Encountered

Instructor: John Webb, FBI Laboratory

This 4 hour workshop is presented by John Webb, a firearms examiner with the Federal Bureau of Investigation. Mr. Webb had instructed the Muzzle-To-Target Distance Determination School for the past several years. This presentation will include a general overview of gunshot residue analysis, problems frequently encountered during examinations and interpretations, as well as a variety of interesting cases and scenarios.

Ammunition Identification and CartWinPro

Instructor: Axel Manthei, CartWinPro

A common task for the firearm examiner is to identify the origin of a cartridge by the head stamp. A headstamp can be more than just the usual letters and numbers. It can contain abbreviations in foreign languages and Arabic numbers as well as symbols. But beyond this the arrangement of the information on the head stamp might be of importance. Special or meaningful codes may also be hidden on the headstamp amongst the more obvious information.

There are many caliber designations, and the difference in measurements can differ only by fractions of an inch. The determination of the correct caliber is, in many cases, easy by reading the headstamp. However, in some cases, even with readable information on the case head, it can be a difficult task. Demonstration will show how CartWinPro is applied in these cases.

Color codes will be discussed as an important means to describe the nature of the cartridge, and they may also be of importance in determining if the cartridge should not be fired in a particular type of range. Coding is usually standardized within a country or an organization, but may have a completely different meaning if it is from another source. Color codes are not only encountered on the bullet-itself, but also in other locations such as the primer annulus, head stamp, or case mouth. Combinations of these codes may also be used to designate the type of cartridge.

With only a bullet from the crime scene, identifying the caliber and cartridge can be a difficult task. Measurement, documentation, and entry of a few parameters in CartWinPro can narrow down the possibilities to a small number, and might also point out some not so obvious ones.

In this workshop we will try to sharpen the eye for hidden details of cartridges, and how one can identify them using CartWinPro.

Basics of Firearm Mechanisms

Instructor: Robert Caunt, Vancouver Police Department

Consideration of the principles underlying common firearm design may reveal existing or incipient problems and dangers. Benefiting both the novice and experienced examiner, course material is presented from the perspective of performing mechanical assessments and failure/unintentional discharge analysis. Topics will include the general design and function of sear systems, locking systems, firing pins, extractors, ejectors, air guns, and other selected topics. Material presentation is classroom based, with examples illustrated in PowerPoint and video.



Workshops

Integrity, Character and Ethics in the Forensic Sciences

Instructors: Dan Gunnell, Illinois State Police, Joliet Forensic Science Laboratory and William E. Demuth II, Illinois State Police, Forensic Science Center at Chicago

Ethics is one of the greatest challenges facing law enforcement today. If possible, this is even more applicable for Forensics. Today the Forensic Science community is increasingly under public scrutiny for all of its actions, making it essential that everyone is aware of the tremendous responsibility that they have and what is expected of them. The goal of this presentation is to provide individuals within the Forensic Science community a heightened awareness of both the ethical and value based issues that impact on their ability to perform their duties. Topics covered will include:

- Value Development
- The Ethical Continuum
- The Rationalized Left Shift
- Martin's Law of Compounding Error
- The Hammer Model of Scientific Misconduct
- The DOOR model for issue resolution
- Video Case Studies of actual Forensic Misconduct Cases

Critical Decision Making

Instructors: Dan Gunnell, Illinois State Police, Joliet Forensic Science Laboratory and William E. Demuth II, Illinois State Police, Forensic Science Center at Chicago

According to Rosenthal's "Coping with Crisis" a crisis is characterized by three elements: threat, urgency, and uncertainty. The ability to make correct and timely decisions during a crisis is critical, particularly for the forensic science leader. Poor crisis decision-making, or the absence of decisions, potentially can produce results that are highly undesirable. The decision-making process is further complicated by various sources of uncertainty, questionable information, compressed time frames, environmental distractions and potential non-deterministic outcomes. This dynamic presentation is designed to provide professionals within the Forensic Science community a heightened awareness of the Critical Decision Making Process and thereby contribute to their ability to not only function, but excel in the current forensic environment. Topics covered will include:

- A review of the classical definition of leadership
- The 5 components of a crisis
- The 10 traits for critical decision making



Family & Friends



Monday, May 19th, 2008
Paradise Cove Luau

Enjoy a delicious Hawaiian luau buffet dinner and spectacular Polynesian show under the beautiful full moon (Yes, we will be having a full moon that evening! Check your AFTE 2008 calendar). Cost includes the following:

- Round trip transportation from the Ala Moana Hotel to the Paradise Cove Luau – bus pick up is at around 4:00 p.m. in the front lobby
- A Mai Tai and shell lei greeting upon arrival at Paradise Cove
- Two standard drink coupons (coupons may be used for juice or soft drinks). Additional beverages may be purchased at the Cove Bars. Please note that the bartenders are required by State law to ask for proof of age when purchasing alcoholic beverages, so please bring proper identification
- Hawaiian Arts and Crafts demonstrations and Polynesian games during the cocktail hour
- Hukilau (net pulling) on the beach
- Shower of flowers demonstration
- The Royal Court Procession and imu (underground oven) ceremony
- A delicious Hawaiian buffet dinner (salad bar, macaroni salad, pasta salad, poi, lomi lomi salmon, fried chicken, fish, kalua pig, steamed white rice, pineapple, haupia – coconut dessert, banana coconut cake, hot coffee or hot tea, taro rolls)
- A spectacular Polynesian show

AFTE 2008 Garry Rathman Golf Outing

Sunday, May 18th, 2008
Ko'olau Golf Club
45-5550 Kionaole Road
Kaneohe, HI 96744

First tee time is at 9:00 a.m.

The annual Garry Rathman Memorial Golf will be held at the beautiful Ko'olau Golf Club, which was named one of the top two golf courses in Hawaii by Golf Digest in 1997. The course is considered the toughest in the nation, but do not let that discourage you . . . just make sure you bring extra golf balls! Enjoy the beautiful views of the lush Ko'olau Ridge and the fellowship that this outing will provide.

Cost includes green fees, cart with ice chest cooler, gift and a bucket of range balls to warm up.



Exhibitors



Exhibitors will be at the Garden Lanai and will be open on:

Monday: 6:30 a.m. to 3:00 p.m.

Tuesday and Wednesday: 6:30 a.m. to 5:00 p.m.

Thursday: 6:30 a.m. to 1:00 p.m.

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Exhibitors



Forensics Source (formerly Armor Forensics)

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- when it has to be right





Exhibitors



Leica Microsystems

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Precision Forensic Testing

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Allan Offringa
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Westfield, MA 01085
Phone: 413-568-7001
Fax: 413-562-1152
Website: www.SavageRangeSystems.com
E-mail: snailtraps@savagearms.com



SED Technology LLC

Stanley Derr
5410 Colchester Meadow Lane
Fairfax, VA 22030
Phone: 703-278-9322
Fax: (703) 278-8331
Website: www.sedllc.com
E-mail: sderr@sedllc.com



Twin Tooling

Rick Assinck
11 Cardico Drive, Unit 14
Gormley, ON L0H 1G0
Phone: 905-888-9398
Fax: 905-888-9378
Website: www.thesecurefiringdevice.com
E-mail: rick@twintooling.com

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Cart & Win Pro

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Auction Items



Donation by:

Item(s) description:

Anonymous AFTE Member

The History Channel Tales of the Gun DVD (2)
The History Channel Forensic Firsts DVD
LED Flashlights (21)
Handbook of Hard-To-Find Gun Parts Drawings book
Silent Evidence book (4)
Metallic replica signs of old advertisements (6)

Atlantic Tactical

5.11 Tactical Range bag

CartWinPro (Axel Manthei)

Browning Animation CD (4)
AK-47 Animation CD (4)
Bavarian Crime Lab Stein

CyberNational, Inc. (Karen Montgomery)

Barrett Model 468 rifle, caliber 6.8mm Rem SPC

Don Gunnell

Stained glass art piece

5.11 Tactial (Brian Tripp)

Field Ops watch

Forensic Ammunition Service, Inc.
(George Kass)

\$300 gift certificate for an update of the headstamp CD or \$300 off the price of a new CD.

H&R 1871

Model Ultra Varmint Fluted rifle, 204 Ruger

INOVA

Tactical flashlight

Leica Microsystems
(Wayne Buttermore)

Leica 2 Step Stereomicroscope
Exploded Gun Drawings book
Guns book
Firearms Investigation Identification and Evidence book

Marlin

Caps (6)

Mossberg

Model 702 Plinksters, caliber .22 (3)

Olin Corporation
(Paul Szabo)

Winchester Deluxe Universal Cleaning kit
Reproduction Winchester Ranger wooden 12 ga. Ammunition box (2)
Winchester 4-piece camping set
Winchester 10x25mm binoculars
Winchester Universal cleaning kit
Winchester saw and axe combo

Otis Technology

Otis Elite Cleaning System
Deluxe Law Enforcement Cleaning System (2)
Lens cleaning kit (5)
Sportsman's Cleaning Mat (5)

Ray Riling Arms Books Co.
(Larry Riling)

CZ75 Cutaway
Case of books



Auction Items



Donation by:

Ronnie Freels,
AFTE Past President 1998-1999

Scott Doyle, AFTE Webmaster

Sig Sauer, Inc.

Smith and Wesson

Team Fabrication and Atlantic Tactical

Ward Center

Item(s) description:

Pistols, Revolvers and Submachine Guns book (4)
Caps (5)
Numrich Gun Parts Catalog #30
Belt buckle

American Rifleman collection, 1977-1985
Shooting Times collection, 1977-1983
Handgunner collection, 1977-1983
Guns & Ammo collection, 1981-1991
Guns collection, 1979-1983

SigTac® RangeMaster Folder knife

Smith and Wesson Knife
Smith and Wesson Cap
Smith and Wesson Muli-tool
Smith and Wesson Gun Pal – 12 piece bit & driver sets (2)
Smith and Wesson Handcuffs (2)

Remington 870P Max shotgun, 12 gauge

\$25 gift certificate



Special Appreciation

The host committee would like to thank and recognize the following individuals, departments and businesses that have provided extraordinary support for this year's 39th Annual AFTE Training Seminar:

Adele Tasaka - Hawaii Visitors & Convention Bureau
Ala Moana Hotel
Ala Moana Shopping Center
Atlantic Tactical
Axel Manthei, CartWinPro
Brian Tripp, 5.11 Tactical
Dale Dudley, Express Engraving Etc.
Daniel Paik, Aloha Island Lei & Floral
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Paul Szabo, Olin Corporation
Richard Hitchcox
Ronnie Freels, AFTE Past President 1998-1999
Scott Doyle, AFTE Webmaster
Sig Sauer, Inc.
Smith and Wesson
Team Fabrication
Tom Deeb, Owner of Hi-Point Firearms
Tony Grissim, Leica Geosystems
Ward Center
Wayne Buttermore, Leica Microsystems

Our sincere apologies to anyone that we inadvertently left off this list.



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