



A Powerful Vision

Interview with Anne-Marie Toensing of the San Mateo County Sheriff's Department

Supervising Criminalist

Interviewed by Heather Smith, *Imaging Specialist, J.H. Technologies*

The San Mateo forensic laboratory recently acquired a new solution for latent print examination that has made work much more comfortable for the examiners, while increasing productivity and providing cost-savings.

What was the problem that prompted you to look for a 'comfortable' solution for latent print examination?

A latent print examiner typically uses a 4.5x magnifier when performing a comparison. One magnifier is placed on the latent impression, and one magnifier is placed on the fingerprint standard. The magnifiers are no more than four inches high when placed on the tabletop. Consequently the examiner must hunch down to examine the latent impression and the standard, which creates an uncomfortable, non-ergonomic position.



Neal Ferguson conducts latent print examination before the new solution.

Several experienced latent print examiners working for the forensic laboratory began experiencing neck, shoulder, and back pain.

A solution was required to enable the examiners to sit upright when conducting latent print examinations.

How did your laboratory evaluate potential solutions for latent print examination?

The latent print examiners suggested several solutions. Whenever feasible, the equipment was borrowed or observed at other agencies, or loaned to us from suppliers and tested at our laboratory. At the end of each observation or test phase the latent print unit held a meeting to get feedback on the item(s) tested.

Which functions were absolutely key, and which features were nice to have, but not required?

The key functions that the unit could not do without:

- The ability for the examiner to conduct an examination in the upright position
- Image size and resolution for printing and screen viewing (number of pixels)
- The ability to enlarge and improve contrast of the image without losing any information
- Split screen capabilities

Bonus functions of the software included the ability to:

- Remove certain color channels
- Convert the image to black and white

- Rotate the image once captured
- Use different methods of printing
- Manually tag, annotate, and calibrate measurements without including a scale in the photo
- Remove background noise (FFT function)
- Use the software for more than latent prints alone; expand its use to other sections of the laboratory

What solution did you finally decide to purchase?

Once all the agreed upon techniques were observed, tested, and reported, management determined the best solution: to purchase a digital camera with copy stand and software. Several aspects factored into the decision,

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including functionality, technical expansion ability, ease of use, learning curve, and cost.

How has this new tool benefited the latent print examiners?

Speed and Ease of Use are the greatest assets of this system. Prior to purchasing the system, employees in the unit were bogged down with photographing all latent impressions using film. Processing evidence was very time consuming and "dirty". Not only



Latent print examination after the new solution.

is processing cleaner, but it is more cost effective and allows personnel to complete cases in a shorter amount of time, therefore increasing productivity. An additional benefit of the system is the fact that latent print comparisons may be performed with each latent print examiner's desired image size, and the examiner now sits in an ergonomically correct, comfortable sitting position.



Waxless Bullet Holder

Gary M. Lawrence, Arkansas State Crime Laboratory



Figure 1

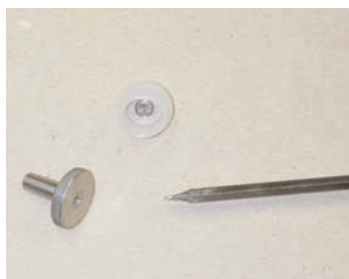


Figure 2



Figure 3



Figure 4

I have designed a waxless, self-centering bullet holder to hold undamaged or partially damaged bullets for comparison on the Leica FS C or DMC comparison microscope. This holder eliminates the 'wobble' commonly encountered with wax mounts. It is made from a basic cartridge case holder and mount (Figure 1).

How to make the waxless bullet holder:

1. Using a screwdriver, remove the plastic cartridge case holder from the metal mount (Figure 2).
2. Clean the flat upper surface of the mount with a Q-tip® and acetone or methanol.
3. Obtain a short section of automotive fuel line or emission line hose in a diameter suitable for the bullet size of interest, i.e., 3/8" internal diameter (ID) for 37 caliber; 5/16" ID for 30-32 caliber; and 7/16" ID for 40-45 caliber.
4. Making sure the end of the hose section is squared off, apply super glue gel in a ring around the bottom edge of the hose (Figure 3). Align the glued edge of the hose with the top of the mount and hold in place, centering the hose as it is held in place.
5. It should dry in a few moments; set aside (vertically) until dry.

The resulting mount may be used as a stand alone unit or used in pairs for a variety of caliber sizes (Figure 4). The hose section may be removed if no longer needed and the glue residue can be cleaned off with acetone. If the inside of the hose gets contaminated and loses its gripping ability, it can be cleaned with a Q-tip® and acetone to refresh the gripping surface. This system can be adapted for the Leica UFM 4 microscope bullet holder system using mounting pins or flat mounting plate holders.



How Clean is Clean Enough?

A Primer on Keeping your Microscope Clean – Part 3

When Do You Need a Service Technician?

by Wayne Buttermore, *Leica Marketing Manager, Forensic Microscopy*

The good news: most forensic microscopes systems are semi-custom configured for the user by the manufacturer. As a result, a high level of quality assurance goes into the assembly of your microscope system. Most people believe that microscopes require very little service; however, even when you take daily care to maintain a clean, well-running instrument, there are times when outside service expertise is necessary.

As discussed previously in our “How Clean is Your Microscope?” series, most microscope problems are associated with wear and tear from daily use. But the most frequently cited reason for obtaining outside service is to satisfy ASCLD/ISO procedures and the requirement that an outside source conduct periodic calibrations of the magnification and measurement accessories. While this type of service is necessary, it rarely addresses the opto-mechanical aspect of the microscope. Often the level of cleaning and adjusting that is done is no more intensive than what can be done in-house. Regular service, in addition to periodic calibration, is recommended. Service organizations are generally prepared to perform five types of service on your instrument:

Warranty Repair: *(included in the cost of the microscope)*

- To correct problems due to defects in workmanship and materials.

Extended Warranty: *(purchased with the microscope)*

- To provide warranty coverage for a period of time beyond the standard warranty; usually includes preventive maintenance service.

Preventive Maintenance: *(purchased with the microscope)*

- To identify and correct problems due to normal wear and tear before they cause large-scale failure (problems not included in the warranty).

Out of Warranty Repair: *(purchased as needed)*

- To correct problems created by normal wear and tear or neglect.

Traditional Clean, Lubricate, and Adjust: *(purchased as needed)*

- Normal maintenance performed by a service technician extends the life of the microscope, but it is not a substitute for preventative maintenance.

Preventative Maintenance

One of the most overlooked and underappreciated forms of service is preventive maintenance (PM). Comprehensive PM helps to obtain many years of service from a microscope, prevent sudden failures,

and provide a thorough cleaning, lubrication, and calibration of magnification and measuring tools. In addition, a good PM includes testing of all electrical components to ensure that factory specifications are met, updates of software and firmware, and that all mechanical components function within factory specifications.

In today’s world of increasingly complex microscope systems, which integrate cameras, computers, and software controls, it is important to consider the expertise level of the organization that performs service. Only a highly trained service engineer is fully informed of the specifications and correct criteria for certification. It is best to use a manufacturer’s authorized service organization. This could be the manufacturer or its trained and certified authorized dealer. At a minimum, it is recommended that service be conducted once a year. Heavy usage may require more frequent service activity.

Should servicing be done in your lab or at a service center?

It depends on the nature of the problem, the size of the microscope system, and how easily the system can be packed for shipment. It is often possible to determine the best course of action via a technical support phone conversation. Due to the modular nature of most microscope systems, one option is to remove and ship a component for repair or possible replacement. On site service, although the most convenient for the laboratory, is also the most expensive to execute. However, larger, complex microscope systems are hard to pack, ship, and maintain operational integrity, so a balance is necessary when assessing service location. For example, if special alignment tools are required, the only way to properly service the microscope is at the manufacturer’s service shop.



Industry News

The ASQDE (American Society of Questioned Document Examiners) Conference, "Complex Examinations: Meeting the Challenges," will be held August 19-24, 2006 at the Portland, Oregon DoubleTree Hotel. Workshops on Signatures (A. Frank Hicks and Howard C. Rile, Jr.), Difficult Handwriting Problems (Lloyd Cunningham), Motor Control and Complexity Theory (Dr. Bryan Found), and Photocopiers (Dr. Reiner Eschbach, Xerox) are planned.

More information: www.asqde.org

The SWAFDE (Southwestern Association of Forensic Document Examiners) Fall 2006 Meeting, "Capturing the Future by Building on the Past," will be held September 22-24, 2006 in Arizona at the Tempe Mission Palms Hotel. More information: www.swafde.org

"Race to Indy" for the MAFS (Midwestern Association for Forensic Scientists) Fall 2006 Meeting, to be held October 9-13, 2006 at the Hyatt Regency Hotel in downtown Indianapolis. Planned workshops include Blood Spatter for the Bench Analyst, Microspectrophotometer Sample Preparation, GC Maintenance, and Integrated Solutions in Forensic DNA Technology. The Thursday Night Gala has a racing theme, so break out your favorite driver's racing gear, and prepare to compete in a pit stop competition and remote control car racing! More information: www.mafs.net

The American Society of Crime Laboratory Directors (ASCLD) will present its 34th Annual Workshop and Symposium, "Practical Issues Facing Crime Laboratory Managers: Managing the Technical Side of Forensics," on October 1-5, 2006. The program includes issues and training suitable for laboratory directors/administrators and policy makers. The meeting will provide updates on federal legislation and grants, recent court decisions, technical working groups, and other issues that affect crime laboratories, and the annual ASCLD business meeting. More information: www.ascl.org

The 32nd Annual NEAFS (Northeastern Association of Forensic Scientists) Meeting will be held November 1-4, 2006 at the Hilton Rye Town Hotel in Rye Brook, New York.

More information: www.neafs.org

The 2006 SWAFS/NWAFS (Northwest/Southwest Associations for Forensic Scientists) Combined Training Conference will be held at the DoubleTree Hotel, World Arena in Colorado Springs, Colorado on November 6-10, 2006. Confirmed workshops include Determination of Contact with Deployed Automotive Airbags, Microanalysis, and Computer Forensics. An ABC Exam is planned.

More information: www.nwafs.org and www.swafs.us

The AAFS (American Academy of Forensic Sciences) will hold its 59th Annual Scientific Meeting on February 19-24, 2007 at the Henry B. Gonzalez Convention Center in San Antonio, Texas. The Academy's annual scientific meeting presents over 500 scientific papers, breakfast seminars, workshops, and other special events. The AAFS represents a wide range of forensic specialties.

More information: www.aafs.org



Glossary

Warranty: An agreement or undertaking by a seller that details responsibility for present or future deficiencies or defects in the quality, or condition of the instrument sold. Details are provided at the time of purchase.

Preventive Maintenance (PM): Maintenance performed to equipment to reduce or prevent future random failures or to provide regular cleaning to improve the quality of the equipment output. PM is scheduled by elapsed time, number of runs or number of items processed.

Extended Warranty: An insurance policy/safeguard against expensive, unforeseen repairs. Covers repairs and/or regular maintenance for an agreed-upon period of time. Extended warranties are also called service contracts.

Technical Support: Proper operational and application-based information/knowledge provided by a manufacturer/dealer to ensure proper usage and function of an instrument.

Technical Service: Repair information/knowledge and/or hands-on service to correct hardware or software problems through repair or replacement of failed components. This may include execution of warranty, out of warranty, and preventive maintenance contracts.



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Note: We are interested in your comments and thoughts about the newsletter. Please feel free to email your comments to molly.lundberg@leica-microsystems.com.