FBI
Latent Fingerprint Services
Universal Latent Workstation

“Tips, Tricks, and Best Kept Secrets”

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Latent Print Unit
IAFIS Repositories

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CMF
Civil File
ULF
Special Latent Cognizant Files

Local, State, Federal, International

CMF Only
Search Penetration

- Search penetration cannot exceed 30%
- If finger position is known, the search will be under 30%
- Each finger position searched equals 10%
- If finger position is unknown use combination of pattern type and descriptors to lower penetration level
Search Penetration

• If there are no descriptors, the easiest way to stay below the penetration cap is to search three fingers at a time using multiple searches

• When using pattern type keep in mind the pattern type in the ten-print files was determined by AFIS with no human intervention therefore image searches are very good on a good quality latent

• Next Generation Identification (NGI) will increase the penetration to at least a 50% average and try to achieve as close to 100% as possible while still maintaining accuracy and reliability requirements

• NO RIDGE COUNTS!
Tolerances

• The AFIS matcher has...
  – approximately a ridge and a furrow tolerance for matching minutiae
  – a 17 degree tolerance for matching the angle of the minutiae tails
  – a one ridge count tolerance for matching ridge counts

• Although minutia type is not used in the matcher, it does determine where the minutia mark should be placed
False and Missed Minutiae

- Missed Minutiae
  - FBI IAFIS encoder missed consistently in the high curve area (cores)
    - innermost recurve
    - spikes
  - The AFE marks minutiae more accurately as you move away from the innermost recurving ridge
Do not mark points on the innermost recurving ridge or any spike inside the innermost recurve.
112 Minutiae Limit
Observations

- IAFIS does not handle multiple clusters well
- Matcher can match minutiae from different areas of prints
- Quality of ten-print is extremely important
- If a tip or side area is captured on the ten-print AFIS can find it
Recommendaions

• Do not mark minutiae on the innermost recurving ridge or any spike inside the innermost recurving ridge

• Avoid questionable minutiae
  – minutiae caused by the edge of a latent
  – minutiae in smudged areas
  – minutiae caused by distortion or brushstrokes

• If a minutia position is unclear it can be marked if it is within the ridge-furrow tolerance
Recommendations

• Avoid lone outlying minutiae
• If a latent is scarred mark either side of the scar and then mark both sides
  – launch each one
• If a latent is twisted, mark one side of twist and launch, then mark the other side and launch
Recommendations

• If you are unsure of the orientation launch the search unoriented
• Do not hesitate to search low minutiae count latents
  – A latent with four minutiae hit against a database of 800,000 fingers
  – Latents with eight minutiae have hit against a database of 108,000,000 fingers
NGI Palm Print Service

- FBI Palm Service will serve as the National Palm Repository (Currently 2.5 Million)
- Fully Integrated within IAFIS
- Primary customers include FBI Laboratory Division and other federal, state and local law enforcement agencies
- Functionality
  - Receive, Store, & Search Palm Prints
    - Including Supplemental Fingers and Palms (Major Case Prints Collection)
  - Allow Bulk Submissions
  - Search Unsolved Latent File
  - Multi-modal Benefits
  - Additional Biometric
  - Solve More Crimes
ULW

Has always operated as a single application for editing and submitting latent searches in an EBTS format with the following abilities:

– is capable of registering latent fingerprints to the ULF
– can retrieve ten-print images from file using FBI #
– can import images from multi-media devices
– can be installed onto vendor hardware if compatible
– can conduct search of other AFIS vendors
– accepts tracings
ULW 2011

- ULW 2011 is somewhat like Microsoft Office
  - ULW 2011 is a suite of applications for latent encoding, search, and comparison
    - **ULW Transaction Manager (TM)** – acts as a submission log for managing casework for any designated system
    - **ULW Comparison Tool (CT)** – is a more streamlined comparison tool liken to modern vendor comparison applications
    - **ULW Latent Editor (LE)** – is a more traditional ULW application for markup and submission of latents for agencies utilizing stand alone systems with minimal staffing.
ULW Pre-NGI

• The ULW version deployed prior to NGI Increment 3 will have palm print capabilities with the introduction of the NGI National Palm Print System in 2013.

• Additional repository search designation and NGI functionality will also be implemented in ULW before the 2013 deployment of latent and palm print capabilities.
Shortcuts

- Drag/Move Toolbars for examiner’s preference
- Control +/- will zoom and roller on mouse
- Control up/down arrow will scroll candidates
- Keyboard is a faster way to do ridge counts
- New Feature: Pin/UnPin
- Levels for more broad range of grays
  - Screen, Multiply, Overlay like Photoshop
- Colorize available for variations
- Tailor language in TM by changing config files
- Can View TP Cards in TM and CT and Print
Latent Editor (ULW)
### Text Fields

#### Rec 01, 1: Transaction Data

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#### Rec 02, 1: Subject Description

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Encoding
Minutia Marks
Ridge Counting
## Transaction Manager

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### Transaction Information

- **Case Prefix:** SAMPLE
- **Case ID:** 1008
- **Case Extension:** 1

### Actions to Current Case

- Edit Search in ULW-LE
- Submit Search
- Add to Unsolved Latent File (ULF)
- Delete from Unsolved Latent File (ULF)
- Create Latent Feature Search(s) (LFFS) from Image File
- Create Latent Feature Search(s) (LFFS) from Image Folder

### Transaction File Content

- **Transaction Control Number:** 201210110810-4230
  - TCN value is updated after transaction is submitted, or file was imported.
- **Add to ULF Requested:** False
- **Add to ULF Confirmed:** False
- **Delete from ULF Requested:** False
- **Delete from ULF Confirmed:** False

### Transaction Summary

- **Case ID:** 1008
- **Case Prefix:** SAMPLE
- **Case Extension:** 1
- **Actions:**
  - Edit Search in ULW-LE
  - Submit Search
  - Add to Unsolved Latent File (ULF)
  - Delete from Unsolved Latent File (ULF)
  - Create Latent Feature Search(s) (LFFS) from Image File
  - Create Latent Feature Search(s) (LFFS) from Image Folder
ULW Comparison
Glance at ULW 2011
Contact Information

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