The State of the FBI Laboratory’s Latent Print Operation

Four Years after Madrid

Greg L. Soltis
Chief
Latent Print Operations Unit
FBI Laboratory Division
Objectives

• Review Background of Madrid Error
• Summarize Findings
  – Department of Justice Meeting
  – International Panel
  – Internal Review Teams
  – OIG
• What has changed?
  – Mission
  – Organizational Structure
  – Case Acceptance / Caseload
  – Staffing
  – Processes / Policies / SOPs
• Where to now?
• Take-Away
Background

- March 11, 2004
  - Terrorists bomb several trains in Madrid, Spain

- March 13, 2004
  - LPU receives electronic transmission of digital images (no info, scale, etc.)
    - 8 latent prints
    - Known exemplars

- March 19, 2004
  - LPU identifies/verifies one latent fingerprint as a result of an automated search
**Background**

- **April 13, 2004**
  - Spanish National Police (SNP) issues ‘negativo’ report regarding latent print
    - What does this mean?
    - FBI Legal Attaché Madrid interprets

- **April 21, 2004**
  - LPU rep travels to Spain to provide basis of identification to SNP
    - What is the reaction?
    - Again interpreted by Legal Attaché
Background

• May 6, 2004
  – Brandon Mayfield arrested by FBI Portland

• May 19, 2004 (in California)
  – Defense expert verifies FBI identification

• May 19, 2004
  – SNP informs FBI they have identified the latent fingerprint with another individual
  – LPU advises FBI Portland of “an issue”

• May 20, 2004
  – Judge releases Mayfield
Prints in Question
Background

- May 22, 2004
  - LPU representatives travel to Madrid to get high quality copies of known exemplar and latent

- May 24, 2004
  - LPU reaches a no value determination with “available information”
    - Additional information needed to explain discrepancies
  - Director apologizes to Mayfield and calls for a review by an international panel
    - Sets the tone for a transparent effort at healing
Background

• June 2004
  – DOJ Meeting

• June 9, 2004
  – LPU representatives meet with SNP in Madrid
  – Discuss aspects of latent fingerprint (placement, development technique, etc.)

• June 17-18, 2004
  – International Panel of Experts convened to review the process and make recommendations for improvement
June 2004
  - Internal reviews begin
July 16, 2004
  - LPU issues two reports based on info and photos obtained during June visit
    - Error with Mayfield
    - Identification with the individual identified by the SNP
September 2004
  - Office of the Inspector General (OIG) investigation
Main questions

- How did this happen?
- How do we prevent it from happening again?
- Are there others we don’t know about?
- What if the SNP had not identified it with another individual?
US Department of Justice Meeting

• As a result of these questions,
  – Capital offense reviews
    • May 2004 to date
    • 436 subjects reviewed
      – 1 blind verified with same result
  – IAFIS research
    • Review IAFIS identifications June 1999-September 2004
    • 16 IAFIS identifications in 14 cases matching exact criteria of error were searched in IAFIS without the examiner knowing details
    • Since then, all single IAFIS searches resulting in an identification have been reviewed (200) and blind verified
International Panel

- Seven distinguished latent print examiners and forensic experts
- Summary of Panel Reports:
  - The process (ACE-V) was appropriate, but misapplied. (Practitioner error)
  - Power of IAFIS candidate list and correlation
    - Confirmation bias or context effect
    - Mind-set created
  - Knowledge of circumstances regarding the latent print should be known for the analysis, e.g., substrate, processing technique, etc
International Panel

- Need for descriptive ACE-V documentation and blind verification

• These reports were used by FBI Laboratory Division to identify issues and create eight Internal Review Teams
Internal Review Teams

FBI Laboratory Chiefs and outside subject matter experts

- Reviewed all relevant documents
- LPU Chiefs interviewed by each team leader
- Final recommendations presented to Lab Director
- Reviewed by LPU Chiefs
- Once finalized, LPU tasked with addressing and implementing 156 recommendations
Internal Review Teams

- Team 1 - Policy for Examining and Reporting Cases with “Less than Original Evidence”
- Team 2 - Documentation and Case Notes
- Team 3 - Technical and Administrative Review Policy
- Team 4 - Management Structure in the LPUs
- Team 5 - Training LPU Employees
- Team 6 - Corrective Action Reports
- Team 7 - Complete SOP Review
- Team 8 - Science
OIG Investigation

- Effort to determine the cause of the error
- Interview Process
  - Those involved in the error
  - Others in the LP Units
  - External experts
- Detailed review of the ACE-V examination as applied to this case
OIG Conclusions

• Primary Causes of the Error
  – The unusual similarity of the prints
  – Bias from the known prints of Mayfield
  – Faulty reliance on extremely tiny (Level 3) details
  – Inadequate explanations for difference in appearance
  – Failure to assess the poor quality of similarities
  – Failure to reexamine LFP17 following the April 13 SNP “Negativo Report”

• Other Potential Sources of the Error
  – Lack of quantity standard for an identification
  – Current verification procedures
  – Working on a high-profile case
OIG Conclusions

- **Found Not to Have Contributed to the Error**
  - No access to the original evidence
  - Digital image quality
  - Determination of “no value” because of the lines of separation or demarcation
  - Faith in the IAFIS technology
OIG Conclusions

- Examiner error
  - Not a failure of the agency, the system or the methodology
What has changed?
Mission Priorities

• Pre 9/11
  – Domestic matters are a major focus

• Post 9/11
  – Primary focus is to prevent terrorist acts
  – Result is shift in resources toward intelligence activities
    • FBI Laboratory endures drastic budget reductions over a five year period
Organizational Structure

- Organizational structure created underlying problems
  - Communication
  - Case Acceptance
  - Caseload

- Reorganization
  - Three units to two
  - LPOU for operations
  - LPSU for infrastructure
Organizational Structure

– Case Acceptance
  • Eliminate
  • Burden Share

– Caseload
  • Pre Madrid – 54 cases per examiner
  • Today – 40 cases per examiner
  • TEDAC
TEDAC

- Roadside Bombs
- IED
- SUICIDE BOMBS
- EFP
Explosively Formed Projectile (EFP)

5 x EFPs in Foam – 23 Aug 05
Case Flow in the LPOU

Number of Open Criminal Cases

Cases Completed-Criminal
Cases Received - Criminal
Cases Received - TEDAC

Month

Number of Cases per Month
Staffing

• Prior to Madrid
  – 91 Funded Staffing Level
  – 75 Forensic Examiners
  – Average years of experience ~ 20
  – 3 / GS-15s and 12 / GS-14s

• Today
  – 67 Funded Staffing Level
  – 60 Forensic Examiners
  – Average years of experience ~ 10
  – 2 / GS-15s and 21 / GS-14s
Processes / Policies / SOPs

- Case Acceptance
- Bias (Confirmation / Context)
- ACE-V
- Documentation
- Blind Verification
- Training
- Research
- SOPs
- Cluster Identifications
Case Acceptance

• No re-examinations
• No state and local cases except
  – Services (process or technology) not available
  – Assistant Director approval required
• More rigid acceptance policy for electronically transmitted images or those received on magnetic media
  – No more latent comparisons with “Xerox” copies or facsimiles of latent prints
Case Acceptance

– Electronic images/photographs must
  • Have a scale or other measurable item
  • Be the original capture
  • Be a minimum of 1,000 ppi for latents
  • Be a minimum of 500 ppi for knowns
  • Be a minimum 8 bit depth
  • Indicate the source
    – Including lifts
  – No IAFIS search should be conducted without scale
Confirmation / Contextual Bias

- Those involved in the error recognized its impact
  - New concept to us
  - Confirmation – “My colleague did, it must be good.”
  - Contextual – “When circumstances indicate it is “logical”
  - Addressed in our SOP for Friction Ridge Examination
    - Verification and Blind verification
  - Also addressed in our Training Manual and training for manual and automated comparisons
ACE-V

- Linear approach as opposed to circular
  - Must declare latent of value before moving to comparison
  - To eliminate “cherry picking” or “parachuting in”
- Training Module
  - Created by new trainees who only received Ashbaugh’s ACE-V training
    - Much more emphasis on science and foundation
  - Reviewed by senior examiners and management
    - Concepts were added
    - Ashbaugh was available for advice
Documentation

- Of analysis
  - On photograph with pointer marks and notations
  - Value / no value decision made before leaving analysis
- Of individualizations
  - On photograph with pointer marks and notations
  - Verifier must use a different photograph and document their ACE
  - Each photograph must be individual to the examiner
- Dates and initials
• Complex Analysis
  – Determined by the Team Supervisor
• Documented photographically, as outlined before, with text in the case file and/or on marked enlargements
  • All documentation retained in the case file
• Automated searches
  – Screen dumps
• Digital images
  – Resolution, compression, source, original capture
Blind Verification

• Difficult issue to get our arms around
  – Can we implement it without bringing production to a standstill?
  – When do we use it?

• Several scenarios discussed

• Settled on single conclusions
Blind Verification

- In each case where there is a single conclusion that conclusion will be blind verified
  - One individualization, one exclusion, one inconclusive
- Applies to IAFIS as well
- The examiner never knows which they’re getting
- Supervisor selects the verifier and provides them unmarked latent and known prints from which the verifier will reach a conclusion
- Verifying examiner documents process on the photograph
Training

• Manual has been completely revised to account for the policy and cultural changes
  – ACE-V module and IAFIS modules were microscopically scrutinized
• David Ashbaugh provided training to the entire staff in basic ridgeology
• Dr. William Babler provided training on anatomy, physiology and embryology
Research

- Research efforts are underway in many areas as a result
  - Permanence
  - Persistence
  - Examiner performance
  - Quality
  - Quantity
Processes / Policies / SOPs

• Meaningful policies rather than documents to satisfy an accrediting body’s demands

• SOPs most affected
  – Training Manual
  – Case Acceptance
  – Friction Ridge Analysis
    • Documentation
    • Blind verification
    • Complex analysis
    • Clusters
  – Automated/Digital
    • Image acceptance
    • Documentation
Cluster Prints

- We will note placement only if forensically relevant and requested by contributor.

- One must stand alone.

- Validation studies will be conducted to establish whether or not characteristics can be cumulative in clusters.
Where to now?

• ASCLD/LAB ISO Accreditation August 2, 2008
• Continuous Improvement
  – Capture blind verification data
  – Continue to evaluate blind verification process
  – Continue to evaluate conflict resolution process
• Leadership training and mentoring
• Better management of our human resources
  – Recognize and promote those responsible for higher level duties
  – Build “Team” approach to addressing cases
  – Actively manage caseloads
Where to now?

- Increase our collaboration with the community
  - National Academy of Sciences
  - Educational Conferences
  - Research venues
  - Federal Laboratory Managers
  - International Partners in GWOT

- Provide high level training and consultation to outside agencies in Daubert preparation
- New examiner training for other Federal Agencies
- Pursue additional research
Take-Away

• The science of fingerprints is sound
• The methodology (ACE-V) is sound
  – “Analysis” component has been narrowly defined at the FBI Lab
  – Blind verification is an extension of ACE-V
  – How do you address conflict in your agency?
• Care must be taken when using AFIS
• Organizational issues matter
• Vigilance for continuous improvement
Take-Away

“We can’t solve problems by using the same kind of thinking we used when we created them.”

- Albert Einstein
Appreciations and Questions

– Thanks to..
  • International Association for Identification
  • Distinguished experts who have assisted us
  • The men and women of the FBI Latent Print Units

– Contact Information
  • Greg L. Soltis
  • 2501 Investigation Parkway
  • Quantico, VA. USA  22135
  • 703-632-7108 – office
  • greg.soltis@ic.fbi.gov