The Madrid Fingerprint Error: Root Cause and Procedures Implemented

Melissa R. Gische
Physical Scientist/Forensic Examiner
Latent Print Operations Unit
FBI Laboratory

Initial report – www.usdoj.gov/oig/special/s0601/PDF_list.htm

Progress review report – www.justice.gov/oig/specials/s1105.pdf

Background

- Bombs detonated on commuter trains in Madrid, Spain
- Spanish National Police (SNP) developed latent fingerprints on bag of detonators
- Latent prints sent to FBI for search in database
- FBI identified one latent fingerprint (LFP17) with Brandon Mayfield
- Defense expert verified identification
- SNP identified print with Algerian national (Ouhnane Daoud)
- FBI issued report identifying Daoud as source of LFP17 and LFP20

Office of Inspector General (OIG) Investigation

- OIG Report primary causes of error:
  - Examiners failed to properly apply the ACE-V methodology
  - Bias from known prints (circular reasoning)
  - Unusual similarity of the prints (unknown to known) – IAFIS found close non-match
  - Faulty reliance on extremely tiny (Level 3) details
  - Inadequate explanations for differences in appearance

http://www.usdoj.gov/oig/special/s0601/PDF_list.htm

OIG Investigation

- Additional OIG findings:
  - The error would not necessarily have been avoided by the application of a numerical standard.
  - OIG did not find compelling evidence that the FBI's verification procedures introduced bias.
  - FBI Examiners were not aware of Mayfield's religion at the time they made the identification.

http://www.usdoj.gov/oig/special/s0601/PDF_list.htm

OIG Recommendations

- Review previous cases
- Revise Standard Operating Procedures, to include more transparent case documentation
- Blind verification policy
- Training
- Research

http://www.justice.gov/oig/special/s1105.pdf

Review previous cases

- IAFIS case reviews
  - Cases with a single latent fingerprint identified as a result of an IAFIS search
  - No false positives found
- Capital offense reviews
  - Ongoing

SOP Examining Friction Ridge Impressions

- Thorough analysis of latent print must be documented before comparing known print.
- Any features relied upon during comparison or evaluation that differ from initial analysis must be documented separately.
- Verifiers must separately complete and document their ACE.
- Increased support needed for distortion explanation.

Blind Verification Policy

- All single conclusions in a case (identification, exclusion, or inconclusive)
  - Value decision may also be blind verified
- Blind verifier has no expectation as to what conclusion(s) may be in the packet and is blind to the following:
  - Conclusion of primary examiner
  - Identity of primary examiner
  - Case information

Training

- More comprehensive training on friction ridge theory and application of ACE
- Training from external providers
  - Exclusionology: Standards and Reducing Errors
  - Cognitive Factors in Making Forensic Comparisons
  - Defense Perspective on Latent Print Testimony
  - Fundamental Concepts in the Vision and Cognitive Sciences
  - Evidentiary Law Perspective on the Scientific Foundation of Fingerprint Testimony

Research

- Quality Metrics
  - Assessing the Clarity of Friction Ridge Impressions, Hicklin et al (2013)
- Accuracy and Reliability ("Black Box" Study)
  - Accuracy and Reliability of Forensic Latent Fingerprint Decisions, Ulery et al (2011)
  - Repeatability and Reproducibility of Decisions by Latent Fingerprint Examiners, Ulery et al (2012)
- Quantity Metric ("White Box" Study)
  - Understanding the sufficiency of information for latent fingerprint value determinations, Ulery et al (2013)
  - Measuring What Latent Fingerprint Examiners Consider Sufficient Information for Individualization Determinations, Ulery et al (2014)
  - Changes in latent fingerprint examiners' markup between analysis and comparison, Ulery et al (2015)

Questions or comments?