



FBI LABORATORY

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**



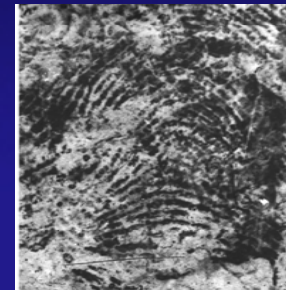
Objectives

- **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



Background

- **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



US Department of Justice Meeting

- **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**



OLG 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



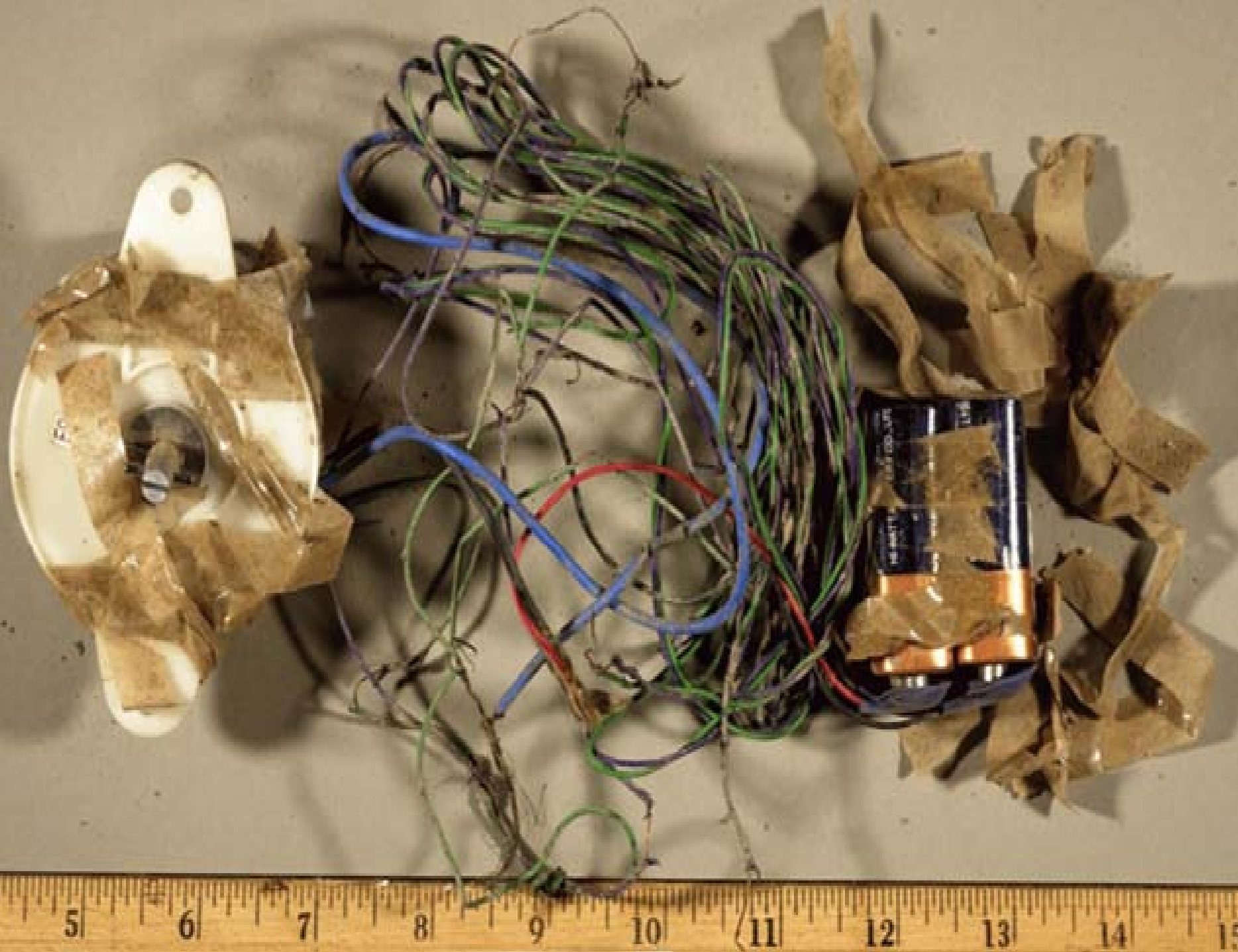


TEDAC



- Roadside Bombs
- IED
- SUICIDE BOMBS
- EFP







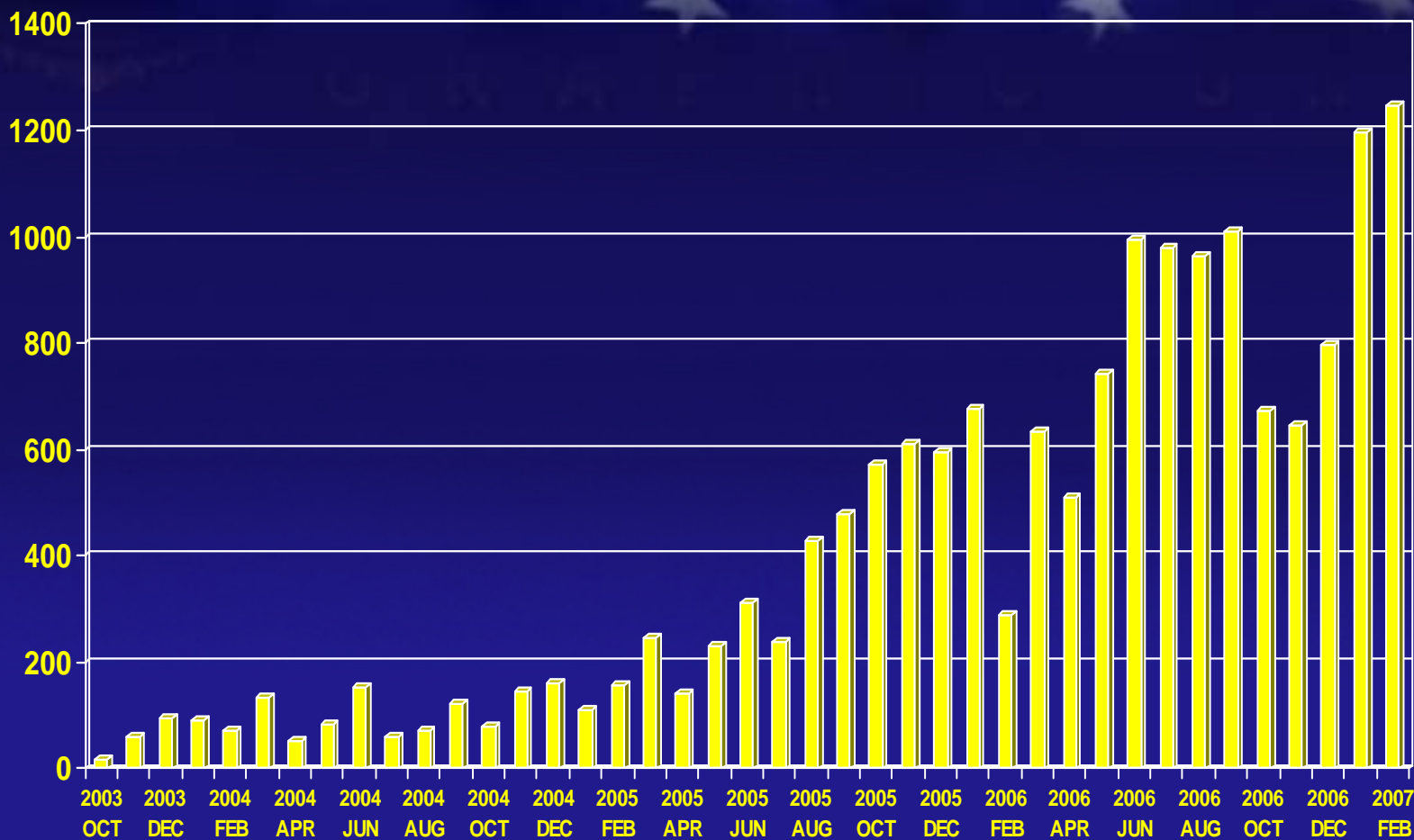
Explosively Formed Projectile (EFP)



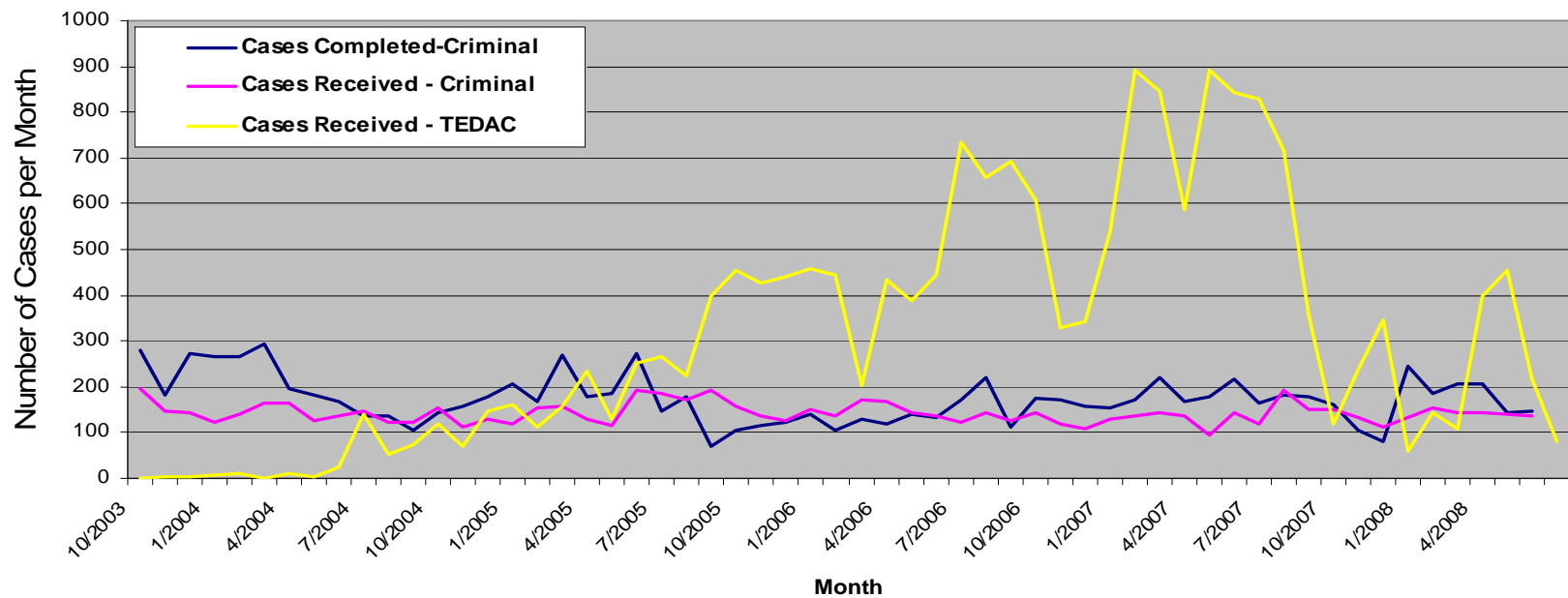
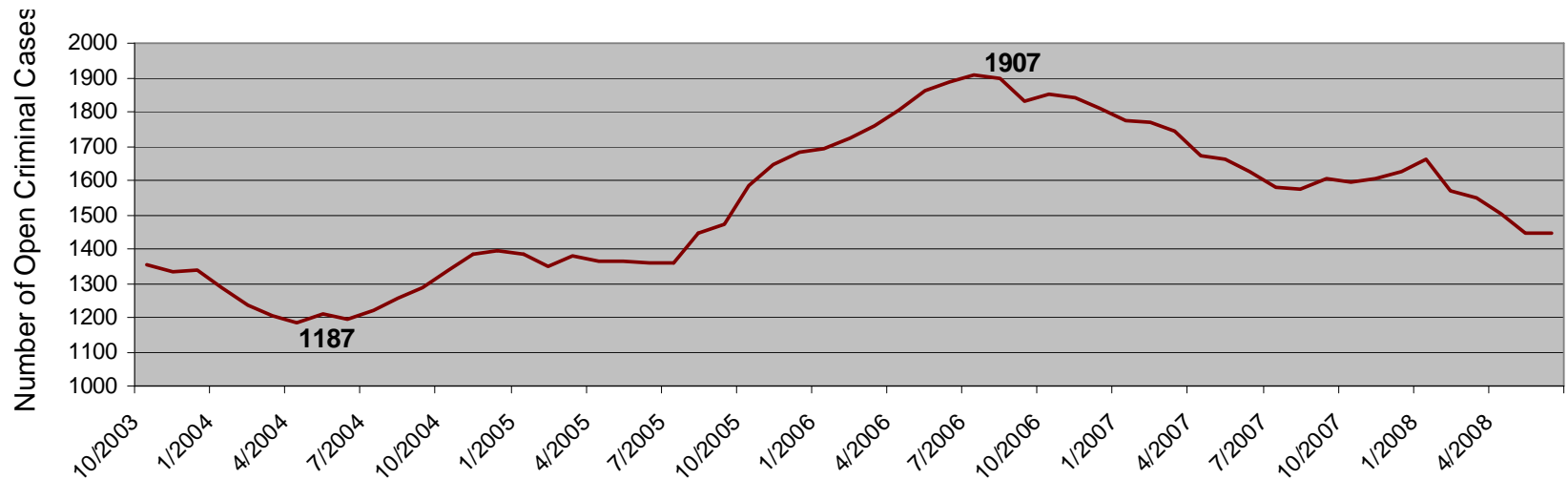
5 x EFPs in Foam – 23 Aug 05

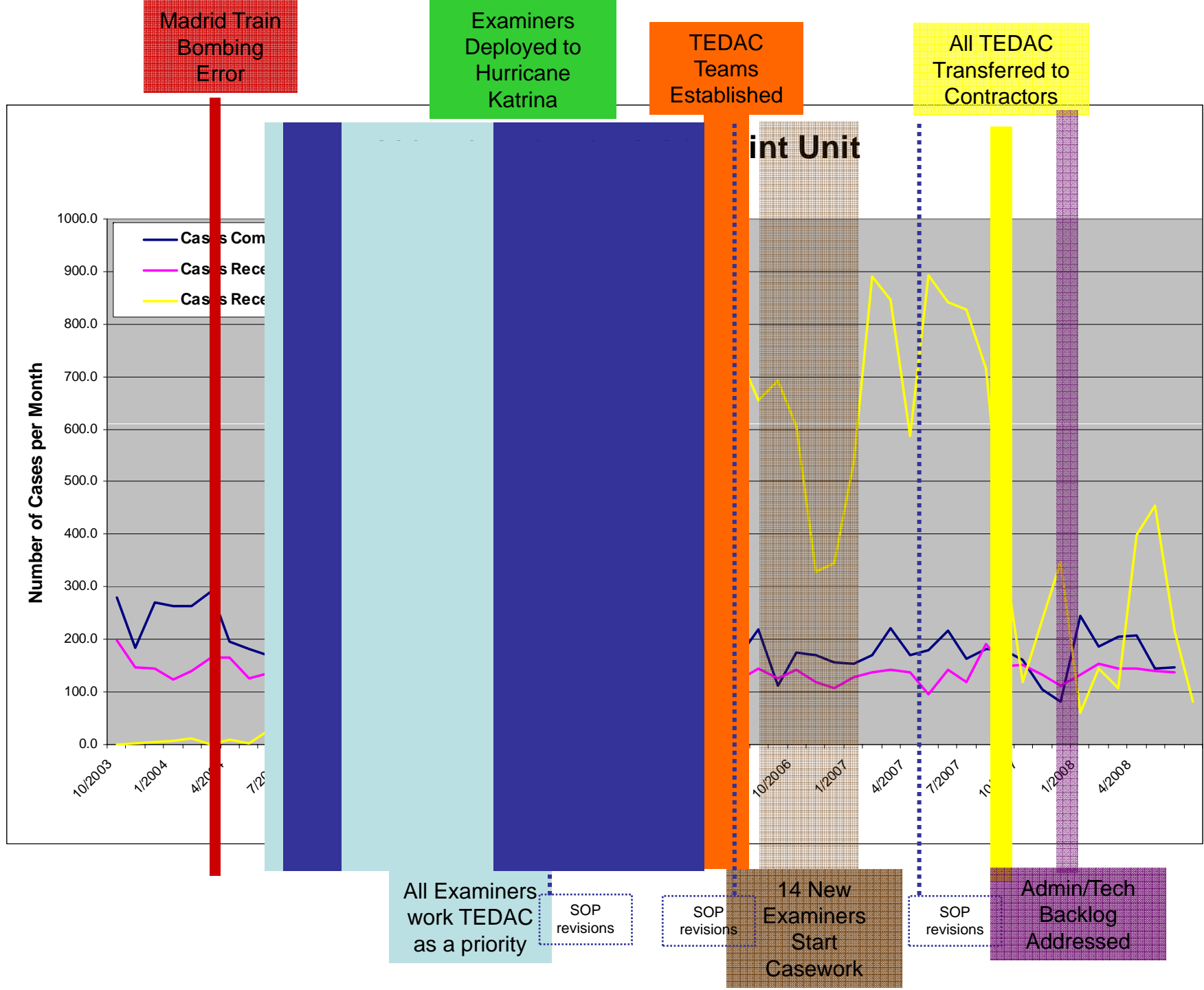


TEDAC Submissions



Case Flow in the LPOU







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



Documentation

- **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 embriology**



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