Acquisition Directorate

Research & Development Center

Biometrics Testing in the Mona Pass

CG-926RDC | Dr. Thomas Amerson & Christina Rolka

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Agenda

- **Overview of Coast Guard Operations**
  - Alien Migrant Interdiction Operations (AMIO)
- **Lessons Learned from Operations**
  - BASS Deployment Observations
    - Operational
    - Environmental
    - Technical
  - 10 Print Feasibility Study
- **Summary**

Alien Migrant Interdiction Operations

Biometric Program History

2006	2007	2008	2009
➢Program started at Sector San Juan as Mona Passage Proof-of-Concept ➢Subset of US-VISIT database loaded to hard drives ➢2-print collection	➢Introduced UscgDesk ➢Biometrics transmitted over satellite comms ➢Deployed a second collection device with crews of Sector San Juan	➢Expanded the proof-of-concept to Florida ➢Started training 87' cutters ➢Deployed a third collection device with crews of Sector San Juan	➢Encouraged inter-agency cooperation with respect to data sharing ➢Initiated research on feasibility of 10-print vs. 2-print captures ➢Developing a multi-digit handheld RFI to be published by the end of CY09 ➢Recapitalizing South Florida equipment


L-1 RDT-3


Datastrip DSVII


MaxID IDLS3

Biometrics At Sea System Process Cycle

Biometrics Metrics

Data as of 10 January 2010 for Sector San Juan:

Metric	Number Encountered	% of total possible
Biometrics Collected	2622	99% of persons encountered
Database Matches	656	25% of records collected
Prosecutions	295	45% of matches 11% of biometrics collected

BASS Deployment Observations

Operational Considerations

- Weight (Handheld Operations)
- One-Handed Operation
- Grip/Device Design
- Cleaning Requirements
- System Size (Including Storage)
- Ease of use (Operator and Subject)

BASS Deployment Observations (cont'd)

Technical Considerations

- Algorithms/Quality Scores
- System Indicators (Visual and Audio)
- Battery Life
- System Displays (Color/Text Design)
- Power Surge Protection
- Intrinsically Safe
- Design of Sensor (Color/Size)

BASS Deployment Observations (cont'd)

Environmental Considerations

- Extreme Temperatures/Temperature Transition
- Environment Movement/Vibration
- Glare (Sunlight Exposure)
- Nighttime Operation
- Water Resistance (Spray)

10-Print Feasibility Demonstration

What is the feasibility of capturing quality 10-print records at sea and submitting the records to IDENT over standard Coast Guard communication systems?

Study Plan:

- Developed a 10-print demonstration capture system
- Integrated COTS equipment with USCG developed software; KVH TracPhone7 satellite communications
- Lab, Pier-side, and Underway testing
- Tested multiple print slap and rolled capture of fingerprint biometrics
- Assessed best practices to be used while onboard the cutter

10-Print Feasibility General Results

Environment Matters

- Direct sunlight completely prevented the optical scanner from capturing fingerprints
- Fingerprint quality scores were degraded in the field and worse when scored at US-VISIT
- Glare from direct sunlight entirely obscured the laptop's display image
- Internal and external humidity resulted in fuzzy, lower quality fingerprint images
- Finger alignment was critical for quality prints and successful software operation
  - Difficult due to sunlight and cutter movement
- Cutter engine noise completely masked audible displays

10-Print Feasibility General Results (cont.)

Design Matters

- System Size: A stand-alone laptop is cumbersome on deck; a smaller form factor for capture is better
- Storage Case Size: Smaller cases are easier to store on 87- and 110-foot cutters
- Cables: System cables may become disconnected, severed, or lost during operations; standard connectors are a must
- Camera Flash: Camera flash can temporarily blind the subject, creating unsafe operations; lighting alternatives should be considered
- Cleaning Procedures: Cleaning procedures disrupt biometrics capture; fingerprint sensor should be designed for easy cleaning

Summary

- **The Coast Guard biometrics program has been a success since its maiden deployment in 2006.**
- **Multiple factors need to be considered when evaluating equipment to function in this environment.**
  - Equipment that functions successfully in a controlled environment may encounter challenges in the field.
  - Testing in the operational environment is critical to identify any un-foreseen challenges prior to deployment.
- **Systems need to be designed with operational, environmental, and technical considerations.**

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