1. Throughput based on Node_Throughput_Post_Clean dataset.
2. Utilization based on Node_Throughput_Pre_Clean dataset, under all conditions.
3. Touch rate based on Throughput_Clean dataset, and is the total of RPD, SPD, Target, and Sensitive Area search rates. (b)(3), 49 U.S.C. § 114(r)
4. SPD and RPD rates are expressed as a percentage of AIT passengers. SPD and RPD rates based on Throughput_Clean dataset.
Advanced Imaging Technology

Automated Target Recognition

July 2011

SENSITIVE SECURITY INFORMATION

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Background

- In the summer of 2010, TSA issued a statement of work to qualified AIT vendors for the development and implementation of an Automated Target Recognition (ATR) solution.
- In the fall of 2010, TSA completed laboratory trials of the L-3 Provision ATR and determined the detection rate to be suitable for airport trials.
- February 2011 the TSA began field testing of ATR at three locations; Las Vegas, Atlanta and Washington Reagan.
- This presentation provides background on ATR functionality and insight on the testing results from airport pilots.

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What is Automatic Target Recognition?

- Software that enables the AIT to automatically identify anomalies on passengers entering the security checkpoint.

- Employs imaging analysis techniques to identify anomalies based on (b)(3), 49 USC 114(r) recognition software to uncover potential hidden weapons, explosives, and other contraband without the need for an imaging officer.

- Full implementation of ATR will be based on equal or better operational effectiveness and suitability performance compared to image operators.
How will ATR be displayed?

Operators are presented with a display that allows for the selection of male (blue) / female (pink) passenger screening.

If anomalies are discovered, a screen will signify specific location(s) on the passenger where anomalies ARE detected. Image is the same regardless of gender.

Separate ATR detection algorithms are used to reduce false alarms based on the passenger's gender.

If no anomalies are discovered, a screen will appear signifying that anomalies are NOT detected.

(b)(3), 49 USC 114(r)

OK

Sensitive Security Information

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Operational Test & Evaluation (OT&E)

OT&E consisted of:

- Observations of TSOs using the AIT w/ATR to screen actual passengers
- Baseline Detection Comparison of AIT w/IO to AIT w/ATR
- Burn-in period, in which the test team reviewed data collection procedures to ensure that test team members collected the data effectively
- Demonstration of system reliability in airport environment to include operation availability and (b)(3), 49 USC 114(r)
- Evaluation of throughput and other operational suitability issues
- Evaluation of system safeguards for passenger privacy

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## Pilot Details

<table>
<thead>
<tr>
<th>Airport</th>
<th>Schedule</th>
<th>Duration of Pilot</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las Vegas International Airport (LAS)</td>
<td>February 01 2010 – March 15, 2010</td>
<td>36 days</td>
<td>2 L-3 AIT Systems (with and without ATR) were evaluated</td>
</tr>
<tr>
<td>Ronald Reagan National Airport (DCA)</td>
<td>February 05 2010 – March 19, 2010</td>
<td>36 days</td>
<td>2 L-3 AIT Systems (with and without ATR) were evaluated</td>
</tr>
<tr>
<td>Atlanta International Airport (ATL)</td>
<td>February 08 2010 – March 22, 2010</td>
<td>36 days</td>
<td>2 L-3 AIT Systems (with and without ATR) were evaluated</td>
</tr>
</tbody>
</table>

## Goals

- **Demonstrate operational utility**: Demonstrate operational effectiveness and suitability in the field environment.
- **Demonstrate Automated Detection**: Demonstrate concept of operations with automated detection capability.
- **Demonstrate Reliability**: Demonstrate system operation availability in airport environment.

**Sensitive Security Information**

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Operational Performance Metrics

Define criteria for operational suitability and effectiveness determination of ATR-equipped AIT units

- **Mission Performance:** Does the AIT automatically detect and display possible threats concealed on passengers?
- **Availability:** Is the AIT sufficiently available in potentially deployable environments to process passengers?
- **Human-Systems Integration (HSI):** Can available trained TSOs utilizing the AIT system at airport checkpoints successfully conduct screening operations?
- **Information Assurance:** Does the AIT prevent unauthorized system use and access to the system reporting data and imagery?
- **Interoperability:** Is the AIT interoperable with other checkpoint equipment and processes?

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Key Performance Parameters (KPPs)

KPPs are those attributes of a system that are considered critical to operational capability.

<table>
<thead>
<tr>
<th>KPP</th>
<th>Result Identified in System Evaluation Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b)(3), (b)(5), 49 USC 114(r)</td>
<td></td>
</tr>
</tbody>
</table>

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Effectiveness

(b)(3), (b)(5), 49 USC 114(r)
Effectiveness

Detection - ATR vs. IO
(b)(3), 49 U.S.C. § 114(r)

Reliability - Operational Availability
(b)(5)

Throughput - Passengers Per Hour
(b)(5)

Passengers Per Hour

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Confirmed Benefits of AIT with ATR

- Allows for reduction of manpower requirements through the elimination of the IO position
- Reduces privacy concerns, since human imagery is not reviewed by TSOs

(b)(3), 49 U.S.C. § 114(r)

- Reduces operator training requirements from days to hours
- Reduces scan time, increasing throughput from (b)(5)

(b)(3), 49 U.S.C. § 114(r)

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Letter of Assessment (LOA) findings:

(b) (5)

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Next Steps for ATR

- (b) (5)

- Explore additional privacy protections for imaging technology
- Test additional ATR-equipped AIT systems from vendors

(b)(3), 49 U.S.C. § 114(r)

(b) (5)
Continuous Improvement of ATR

(b)(3), 49 U.S.C. § 114(r)

- OST will execute a test excursion in July 2011 to [redacted] at the three original ATR OT&E locations: ATL, DCA and LAS

(b)(5)

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Funding

- 500 units procured to date
- $86.3M awarded for test and production units, shipping, OEM installation, and training classes
- $7.8M awarded for ATR upgrades
- FY11 Budget $87.5M ~ 500 units

(b) (5)
Deployment Approach

- Upgrade existing AIT units to ATR (b) (5)
- Install new ATR-equipped AIT units
Deployment

ATR Deployments (August-January)
(b) (5)
- Total AIT Units
- Total Airports

Additional AIT Deployments (January-July)
(includes removal of WTMD with some deployment in)
(b) (5)
- Total AIT Units
- Total Airports

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