

Gamma Ray Cargo Inspection

TITLE: Advanced Gamma Ray Cargo Inspection System

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Why Gamma?

- Developed a high-resolution, gamma cargo NII System
- Recent Field Trial with the POE conclusion that: “there really is not anything currently available that would be any better for our Control Zone.” WHY??
 - SAFE-Contained Rad Field
 - OPERABLE-Easy to maneuver
 - EFFECTIVE-Excellent Imaging
 - AVAILABLE-Over 95% in Trial
 - EASY-Lo Maintenance/Training
 - LO COST- Less than ½ of Accelerator Based Systems



Prototype Gamma NII at Douglas, AZ POE

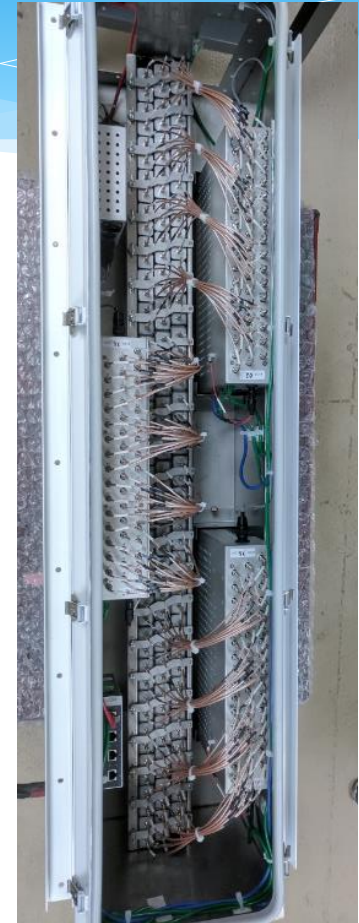
Gamma Ray Cargo Inspection

Premise:

- Each POE has unique requirements for NII Cargo Inspection Equipment
- Gamma Ray inspection has been shown to be the right tool in certain situations based on:
 - Simple Source – easy operations
 - Always in stand-by: No Warm Up
 - Reduced maintenance cost
 - Wider (22') inspection tunnel
 - Lower and confined radiation exposure – smaller footprint
 - Higher availability – 95% during Field Trial
 - Lower Acquisition Cost

Gamma Ray Cargo Inspection

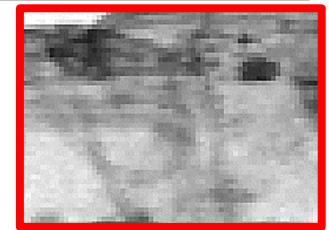
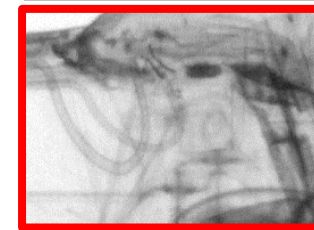
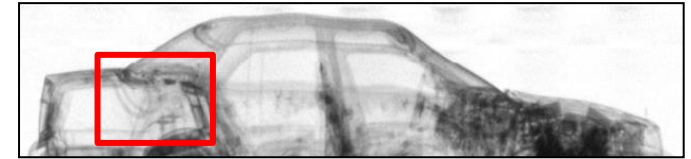
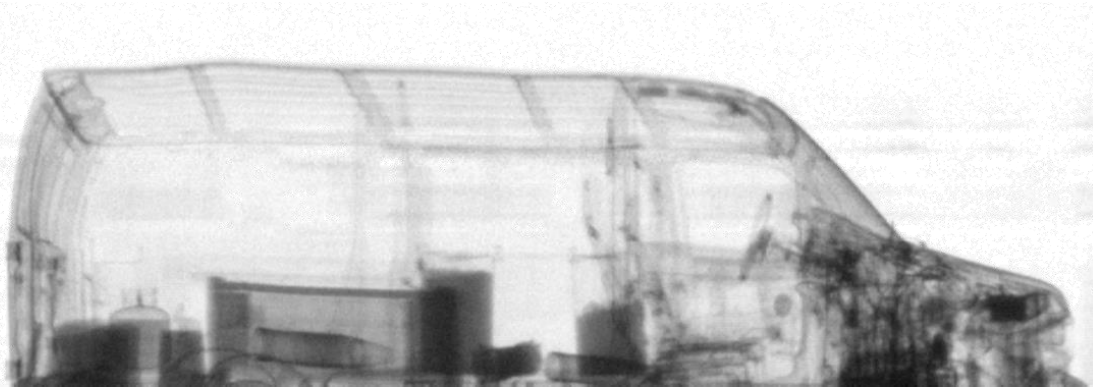
- Imaging Enhanced with Modern Solid State Detectors exploited by modern computer Hardware and Algorithms
 - Better Spatial Resolution - Contrast Sensitivity
 - Detectors Qualified to 75°C (167°F)
 - Longer life than current detectors
 - Spectral Detectors and Gamma Source Enable Real Time Calibration
 - Each Detector Temperature “Tuned” during Normalization to adjust to changing temperatures during the day



**More Pixels
Better Image**

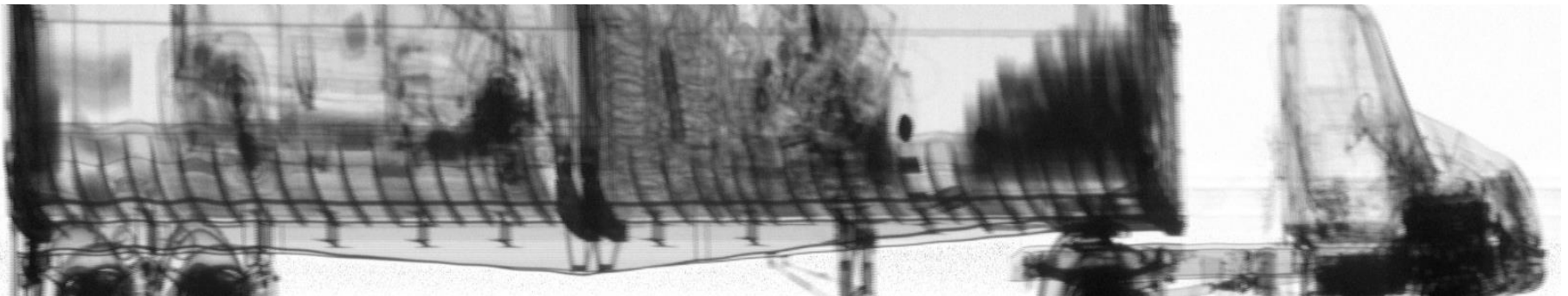
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Imaging Results:



Prototype

Legacy



All Images taken at Rapiscan, Billerica, MA

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Field Trial Report:

- Better Images
- Secure / controlled login
- Improved User Interface
- Fits in the Douglas POE control system
- Training is easy to obtain



Prototype Gamma NII System at Douglas, AZ POE

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Field Trial Conclusion: “... there really is not anything currently available that would be any better for our Control Zone.”
(The Prototype has better imaging than the other NII options cited)



Prototype Gamma NII System at Douglas, AZ POE

Spectral Labs (SLI) - Employee Owned

- Founded in 2009
- California Radiation Material License
- DCAA/DCMA Approved Accounting
- ISO9001:2015 Certified
- 20+ Professional Staff engaged in DHS, DoD, DOE efforts

