The VeriSpreader™ Crane Mounted Solution (CMS)

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VeriTainer Corporation

Types of Scanning Devices

- Land based Portals do NOT work for “ship to rail”, transshipment, and next generation automated terminals
- Land Based Portals only achieve a 2-5 second exposure to the containers as they are exiting the port
- A Crane-Mounted Solution (CMS) uses sensors embedded in the spreader bar to scan the container during every lift (26-120 second exposure)

Spectroscopy for Isotope Identification

- Next generation scanning technology using Sodium Iodide Gamma Ray and Helium 3 neutron detectors developed to bring efficiency to port scanning through isotope identification

- Existing plastics scintillation technology (PVT) alarms on all radiation causing a high number of nuisance alarms, resulting in excessive secondary inspections
  - 115,000 CBP man hours required for secondary inspections at the Port of LA in 2008 alone

VeriSpreader deploys next generation technology in the right place.

CMS Operational Advantages

- 100% non-disruptive scanning
  - Seamless in all types of operations
- Domestic Ship to Rail solution
  - Land Based Solutions are unable to address CONOP
- Port of Origin solution
  - Only viable solution for all 4 types of transshipment
- Immediate scanning upon entry into US
  - Currently containers are scanned up to 10 days after arrival, compromising US Security
- Scanning cannot be bypassed
- Requires no terminal real estate or additional infrastructure

VeriSpreader™ meshes with current terminal operations.

CMS Technical Advantages

- Significantly longer dwell time for scanning
  - 26-120 seconds vs. 2-5 seconds for LBPs
- Isotope identification
  - Significantly reduces need for secondary inspection
- Density/shielding determination
  - Proprietary software using natural background radiation to measure density under development
  - Acoustic density determination under development
- Manifest comparison
- Smuggling determination on outbound freight

VeriSpreader™ yields better performance via longer dwell times.

Performance Comparison

- PVTs: 1st Generation Technologies with no isotope identification, which results in excessive nuisance alarm rates
- Land Based ASPs: Next generation technology developed for isotope identification, short dwell time compromises performance
- VeriSpreader™: Next generation technology capable of isotope identification due to long dwell time, proven durability in port
  - The VeriSpreader was deployed at the Port of Oakland in a live operating environment from April 2007-June 2008 and performed without incident

VeriSpreader™ field tested in rugged maritime environment.

Land Based Scanning Hidden Costs

- Land Based Portals will require a substantial and costly change in operations for many terminal operators
- Land Based Portals require substantial, distributed staffing
- PVT Portals require substantial secondary inspections
- CMS has no real-estate impact on terminal

VeriSpreader™ requires
no additional staffing or container moves.

Supply Chain Resiliency

- Trade Resumption:
  - The entire global shipping supply chain is a single isolated event away from a complete and long-lasting shut down.
- Scanning Infrastructure versus Risk Based Algorithms:
  - The current risk-based algorithms for data screening will not be sufficient to restart operations in the wake of an event. CMS on each crane creates reliable and true perimeter security infrastructure against which continued operations will be able to move forward.
- Global Deployment:
  - With less than 4000 cranes worldwide, CMS is the only feasible 100% scanning solution in terms of global deployment and maintenance.

The VeriSpreader™ is the backbone of global supply chain resiliency.

Summary of Crane-Based Scanning

- True 100% container scanning enabled without impacting the flow of commerce
- Scanning cannot be compromised
- No valuable port real estate is used
- Unmanned, resulting is significantly lower cost of ownership
- Coverage for all four types of transshipment
- No increase in emissions & no dangerous x-rays
- Global Reciprocity
- True Supply Chain Resiliency

The VeriSpreader™ achieves equilibrium between *real* security and high throughput.

VeriTainer's Evolving CMS

- Existing capabilities exceed that of any other system
- Possible future enhancements to the solution include
  - Proprietary shielding/density determination software incorporating through the use of natural background radiation
  - Non-ionizing active interrogation via acoustic for shielding determination
  - Incorporation of other operational port infrastructure to create enhanced 2-sided passive look
    - Will be more sensitive than any solution in the marketplace
  - Incorporation of active imaging for automated ports

The VeriSpreader™ will be the world's most effective and comprehensive scanning system.

United States Senate
Homeland Security Committee

Hearing Examining DNDO's ASP & CAARS Programs

"Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments."

Senator Joseph Lieberman's Opening Statements:

- "The danger of terrorists acquiring a nuclear weapon is real and present. Between 1993 and 2006 there were 1,080 confirmed incidents of illicit trafficking in nuclear materials – with 18 of these cases involving weapons-grade materials and another 124 involving material capable of making a so-called "dirty bomb" that would use conventional explosives to spread nuclear material."
- "ASP was designed to detect unshielded nuclear materials with greater accuracy and fewer false alarms than the portal monitors now in use."

The VeriSpreader™ efficiently detects and identifies RDD's and unshielded nuclear materials, thereby accomplishing the goals set forth for next generation passive technologies.

VeriTainer Capability Analysis

VeriTainer Capability Analysis (VCA)

Methodology

- The conclusions drawn in this deck are based on the results of VeriTainer testing, DHS testing performed at Tacoma and DOE testing performed at Los Alamos National Labs
- This deck contains the opinions of VeriTainer and is not designed to characterize the opinions of DOE, NNSA, CBP, DNDO or DHS.
- “PVT” below is used to refer to a Portal Monitor using polyvinyltoluene and Helium-3

VCA - CONOPS

Capability	VeriSpreader Only	PVT Only	PVT & VeriSpreader
Works for Transshipment			
Works for Ship-To-Rail			
Can be deployed in any terminal			
Same Infrastructure for reciprocity			

VCA – Radiological Dispersal Devices (RDD's)

Capability	VeriSpreader Only	PVT Only	PVT & VeriSpreader
Detects unshielded RDDs Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects unshielded RDDs Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects unshielded RDDs After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Detects shielded RDDs Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects shielded RDDs Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects shielded RDDs After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Identifies RDDs	Up to 4 Scans		Up to 4 Scans

Note: "4 Scans" for the VeriSpreader refers to Port of Origin Load, Transshipment Hub Discharge, Transshipment Hub Load, Port of Destination Discharge; "1 Scan" for the PVT refers to Port of Destination Exit Gate.

Note: PVTs could detect RDDs before U.S. entry if they are deployed at entry gates, but would still not work for Transshipment.

VCA – WGPu-based Device

Capability	VeriSpreader Only	PVT Only	PVT & VeriSpreader
Detects unshielded Device Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects unshielded Device Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects unshielded Device After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Detects shielded Device Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects shielded Device Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects shielded Device After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Identifies Device as containing WGPu	Up to 4 Scans		Up to 4 Scans

Note: “4 Scans” for the VeriSpreader refers to Port of Origin Load, Transshipment Hub Discharge, Transshipment Hub Load, Port of Destination Discharge; “1 Scan” for the PVT refers to Port of Destination Exit Gate.

Note: PVTs could detect WGPu-based Device before U.S. entry if they are deployed at entry gates, but would still not work for Transshipment.

VCA – Neutron Sources

Capability	VeriSpreader Only	PVT Only	PVT & VeriSpreader
Detects unshielded Source Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects unshielded Source Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects unshielded Source After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Detects shielded Source Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects shielded Source Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects shielded Source After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans

Note: “4 Scans” for the VeriSpreader refers to Port of Origin Load, Transshipment Hub Discharge, Transshipment Hub Load, Port of Destination Discharge; “1 Scan” for the PVT refers to Port of Destination Exit Gate.

Note: PVTs could detect Neutron Sources before U.S. entry if they are deployed at entry gates, but would still not work for Transshipment.

VCA – HEU-Based Nuclear Device

Capability	VeriSpreader Only	PVT Only	PVT & VeriSpreader
Detects unshielded Device Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects unshielded Device Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects unshielded Device After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Detects shielded Device Before U.S. Arrival	Up to 3 Scans	Not for Transshipment	Up to 3 Scans
Detects shielded Device Before U.S. Port Exit	Up to 4 Scans		Up to 4 Scans
Detects shielded Device After U.S. Port Exit	Up to 4 Scans	1 Scan	Up to 5 Scans
Identifies Device as containing HEU	Up to 4 Scans		Up to 4 Scans

Note: “4 Scans” for the VeriSpreader refers to Port of Origin Load, Transshipment Hub Discharge, Transshipment Hub Load, Port of Destination Discharge; “1 Scan” for the PVT refers to Port of Destination Exit Gate.

Note: PVTs could detect HEU-based Device before U.S. entry if they are deployed at entry gates, but would still not work for Transshipment.

VCA – Threat-level Radioactive Material

Capability	VeriSpreader Only	PVT Only	PVT & VeriSpreader
Detects unshielded HEU 96%			
Identifies unshielded HEU 96%			
Detects unshielded WGPu 98%			
Identifies unshielded WGPu 98%			
Detects lead-shielded HEU			
Detects poly-shielded HEU			
Detects lead-shielded WGPu			
Identifies lead-shielded WGPu			
Detects masked HEU & NORM Mask			
IDs masked HEU & NORM Mask			

Note: In the masking case, both the VeriSpreader and PVT give a gross count detection. But, the VeriSpreader identifies the NORM 100% of the time and identifies the masked threat (HEU) 70% of the time.

VCA - Conclusions

- VeriSpreader reaches CONOPS that Land Based Portals Cannot
- A layered defense consisting of PVTs and VeriSpreaders will make our country safer
- Therefore, NNSA and CBP should deploy VeriSpreaders now and work with VeriTainer to improve the technology

VCA Recommendations

Deploy VeriSpreader Immediately for Ship-to-Rail

- CBP is not currently scanning Ship-To-Rail cargo in the U.S.
- The VeriSpreader detects and identifies RDDs in Ship-To-Rail operations. CBP should deploy VeriSpreaders in ports like Tacoma and Virginia International Terminals immediately.
- The VeriSpreader meets DOE Guidance for Neutron Detection Capability. It can detect WGPu or a fully-assembled plutonium based nuclear warhead.[1] It should be deployed immediately to protect against the threat of a plutonium-based nuclear weapon in Ship-To-Rail CONOPS.
- With the understanding that no passive system can detect shielded HEU in all source and shielding configurations, the VeriSpreader should be deployed in Ship-To-Rail CONOPS immediately to protect against the many HEU threat configurations it is capable of detecting.

[1] A lower bound on neutron emissions from a plutonium-based nuclear warhead is 400,000 neutrons per second according to "Detecting Nuclear Warheads" Science and Global Security, 1990, vol. 1. Fetter, et al.

VCA Recommendations

Deploy VeriSpreader Immediately for Transshipment

- NNSA is not currently scanning Transshipped cargo before it reaches the U.S.
- The VeriSpreader detects and identifies RDDs before they reach the United States. NNSA should deploy VeriSpreaders in Transshipment CONOPS immediately.
- The VeriSpreader meets DOE Guidance for Neutron Detection Capability. It can detect WGPu or a fully-assembled plutonium based nuclear warhead.[1] It should be deployed immediately to protect against the threat of a plutonium-based nuclear weapon in Transshipment CONOPS.
- With the understanding that no passive system can detect shielded HEU in all source and shielding configurations, the VeriSpreader should be deployed in Transshipment CONOPS immediately to protect against the many HEU threat configurations it is capable of detecting.

[1] A lower bound on neutron emissions from a plutonium-based nuclear warhead is 400,000 neutrons per second according to "Detecting Nuclear Warheads" Science and Global Security, 1990, vol. 1. Fetter, et al.

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