

Container Security Overview

May 2008



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Border Protection

Conveyance Security Devices (CSDs)

"CSDs hold the promise of securing a container during its journey from a C-TPAT compliant manufacturer's loading docks overseas, all along the inland dray or transport to the foreign seaport, to the U.S. seaport. If the container has been breached or opened along this journey, CBP will know."

"CBP will be able to detect containers that have been tampered with en route, which are by definition high risk. We have never been able to do this before."

CBP Commissioner W. Ralph Basham, 7/11/2007



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CBP Objectives for CSDs

- Support the CBP layered-defense approach, by providing basic tamper indication
- Improve container & trailer security through use of technology
 - Detect intrusion through container doors
 - Report container intrusions electronically
- Maximize effectiveness of limited inspection resources through improved targeting based on CSD tamper indication
- Facilitate the free flow of legitimate cargo
- Near-term operational solution



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CSD Concept of Operations (ConOps)

- Trusted partners or CBP shall be responsible for installing and arming CSDs.
- While in transit, the CSDs will monitor sealed container doors for unauthorized intrusions and log alarms
- CBP will interrogate the CSDs using fixed readers to determine alarm status
- If CSD reports alarm or failure, CBP shall respond with protocols such as seal verification or NII



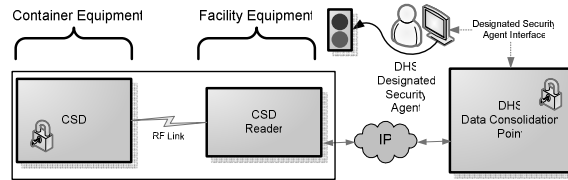
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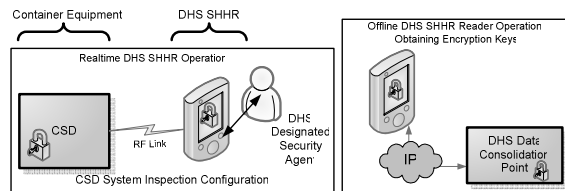
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CSD System Components

- CSD
- CSD Reader
- DHS Data Consolidation Point (DCP)
- Secure Handheld Reader



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CSD Requirements

From CBP CSD Requirements document

Physical

- Compatible with general purpose ISO 668 containers or trailers
- No specialized tools or modifications to the container required.
- Shall not adversely affect shipping operations or cargo loading and unloading activities

Performance

- Probability of detection (Pd) of 95% or greater
- Probability of success of 96% or greater
 - Success defined to be no false alarms or critical failures
- Sufficient power to support a trip of 70 days

Communications

- Comm. protocol based on IEEE 802.15.4b standard, 2.4 GHz
- Alternate communications may be proposed by vendors



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CSD Planned Activities

“... following CBP’s recent Request for Information on CSD technology, CBP will soon begin testing the CSD technology provided by the most qualified vendors who participated. If this technology passes the laboratory testing phase, the devices will then be tested in real world operational environments.”

“This measured approach will lessen the [risk and] will allow CBP to better understand the state of available technologies that have the potential to increase the security of containers as they transit the global supply chain.”

CBP Deputy Commissioner Jay Ahern, 4/2/2008

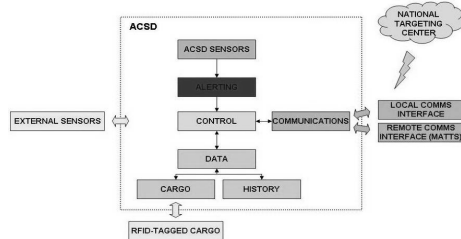


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Advanced Container Security Device (ACSD)

ACSD provides additional detection capabilities beyond the CSD



- Advanced sensor system for monitoring standard ISO shipping container integrity
- Detects intrusion on any 6 sides, doors, presence of humans, and allows for future sensor integration
- Currently under development and test by DHS Science & Technology

- Device that:**
 - Assures the integrity of container loading and documentation
 - Significantly reduces risk of undetected tampering in transit
 - Provides accurate, complete, timely, and protected shipment information
 - While ENHANCING supply chain efficiency
- Technical Operational Objectives**
 - Sense any intrusion into the container
 - Signal processing for alerts with low Pfa
 - Data systems to log interactions, loading, unloading
 - Security of data for shippers
 - Local (container) and Remote communications to National Targeting Center

TECHNICAL OBJECTIVES		
Objective	Goal	Threshold
Detect a hole on any container side	9 sq in	36 sq in
Time to detect hole on any container side	6 min	
False Alarm Rate (Pfa)	.0001 / trip	.0005 / trip
Probability of Detection (Pd) of an alert event	0.75	
Detect animal/person > 110 lbs	2 hrs	
Operational Availability (Ao)	0.95	
Power Source Lifetime	> 5 yrs	
Cost/Trip	<\$50	



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In-Bond

- To facilitate trade, the U.S. CBP In-bond system allows imported cargo intended for either U.S. or foreign markets to move from one U.S. port to another without being assessed U.S. duties or quotas and without officially entering U.S. commerce.
- One problem is that CBP does not consistently reconcile In-bond documents issued at the arrival port with documents at the destination port to ensure that the cargo is either officially entered with appropriate duties or quotas applied, or is in fact exported.



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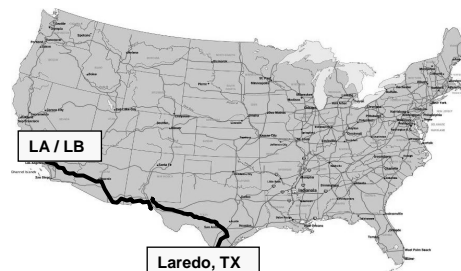
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In-Bond Pilot Test

CBP conducted a pilot test using RFID and imaging technology to reconcile In-bond shipments

- Use RFID tags to record exit at port of origin and entry at destination port
- Use digital images to verify that the container is the same at origin and destination
- Reconcile and identify overdue In-bond shipments
- 70 operational shipments from LA/LB, CA to Laredo, TX



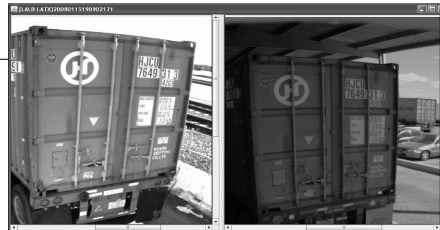
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In-bond Pilot Test Results

- 70 of 70 (100%) container tag and container ID creation event data recorded
- 53 of 53 (100%) container departure event data recorded
- 63 of 66 (95%) container arrival event data recorded
- 47 of 49 (96%) complete container departure and arrival event data recorded



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