U.S. Customs and Border Protection

Radiation Systems Evolution

From Counter-Drug to Counter-Terrorism

Joint CBRN Conference

Ft Leonard Wood – NDIA

June 26, 2007

Richard T. Whitman CBP RSO (COL-R, CM, USAR)

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Radiation within the CBP Mission

- This presentation demonstrates how Operational Radiation Safety has assisted the rapid fielding of Non-Intrusive Inspections Systems for the U.S. Customs and Border Protection

- This briefing is for your information and is NOT for attribution.

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Radiation within the CBP Mission

Non-Intrusive Inspection:

- Currently Gamma-Ray or X-Ray/Accelerator

Passive Detection:

- Portal Monitors and ‘self ranging’ devices
- Examination of radiation in commerce

Growth Since 1998

Growth Since 1998

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CBP Radiation Safety Philosophy

Actively Engage Stakeholders:

Unions
Trade Associations (e.g., Film, Port Authorities)
Public Bodies (e.g., CRCPD, OAS)
Department of Defense
CORAR and NEI
US and International Regulators
Concensus Groups: ANSI

Continue to refine current & planned protection

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CBP Radiation Safety Philosophy

Radiation Worker Exposure limits are falling to 40% of current levels

By working with Vendors, CBP exposure limits are 2% of current worker limits

CBP maximum exposures are <1% of limits!

Continue to refine current & planned protection

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Radiation Detection System Baggage X-ray

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Radiation Detection System Baggage X-ray

Personal Radiation Detector

Vehicle and Cargo Inspection System II

(Early models have Cesium-137; later models have Cobalt-60)

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101-X-ray Van

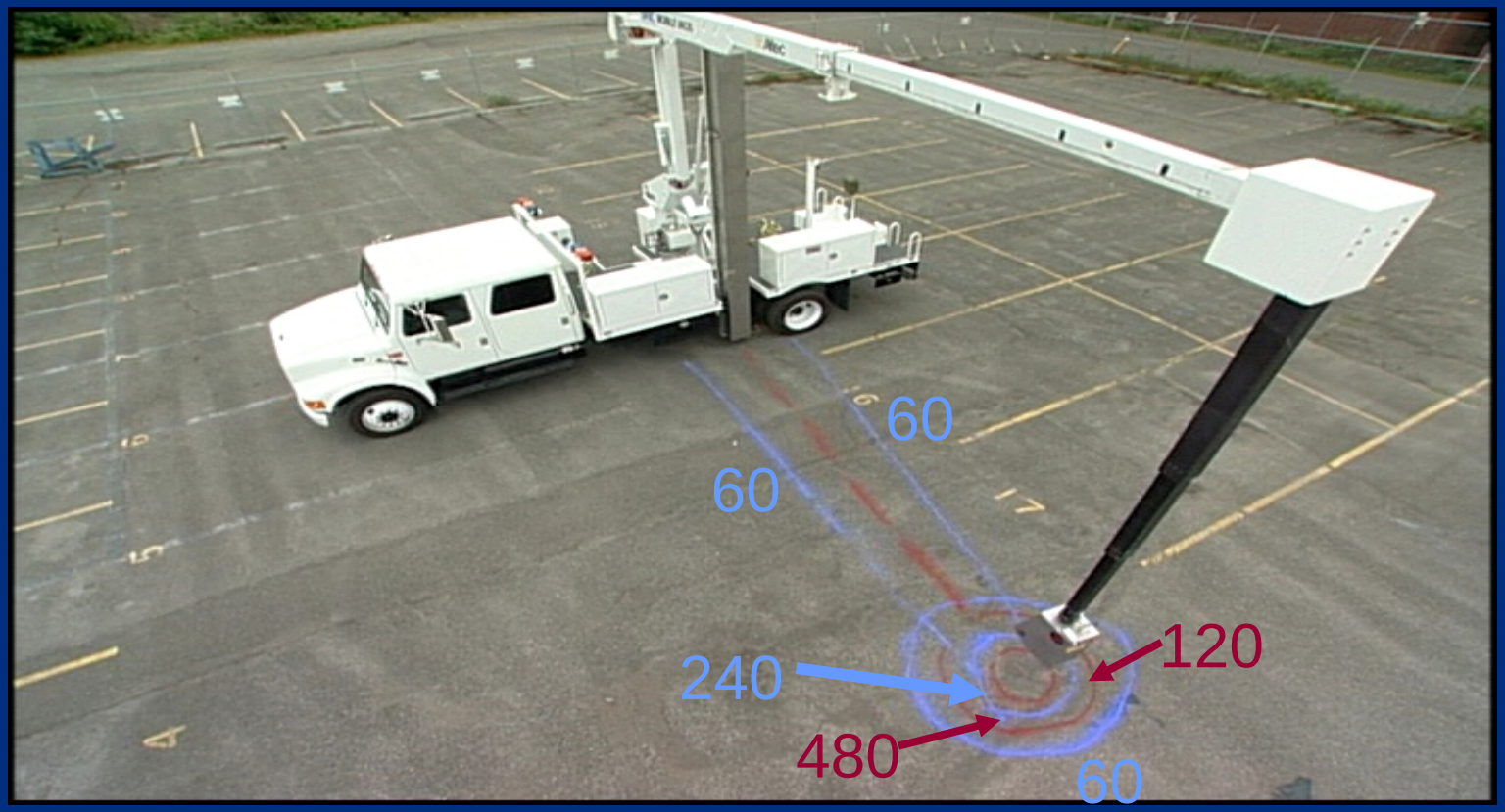
Truck X-ray System

Mobile Truck X-Ray System

Vehicle and Cargo Inspection System

(Early models have Cesium-137; later models have Cobalt-60)

Mapping Radiation Fields (microR/hr)



Mobile Vehicle and Cargo Inspection System

(with Cobalt-60)

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Mobile Vehicle and Cargo Inspection System

(with Cobalt-60)

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CBP Radiation Safety Standard

Small systems and gamma systems

Less than 0.5 microSieverts in any hour

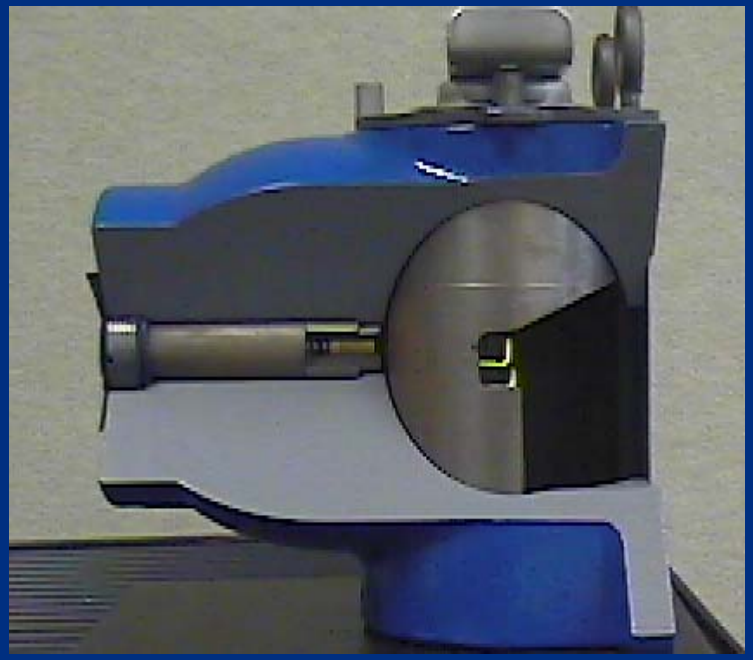
Less than 1.2 microSieverts peak in any hour

Less than .025 microSieverts per pass of any system

Less than 1 milliSieverts in any year

Source Information

Shielding



Source Selection

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Gauge Selection

Typical Gauge Items

CBP Cobalt Gauge Items

Safety Features and Markings

Safety Features and Markings

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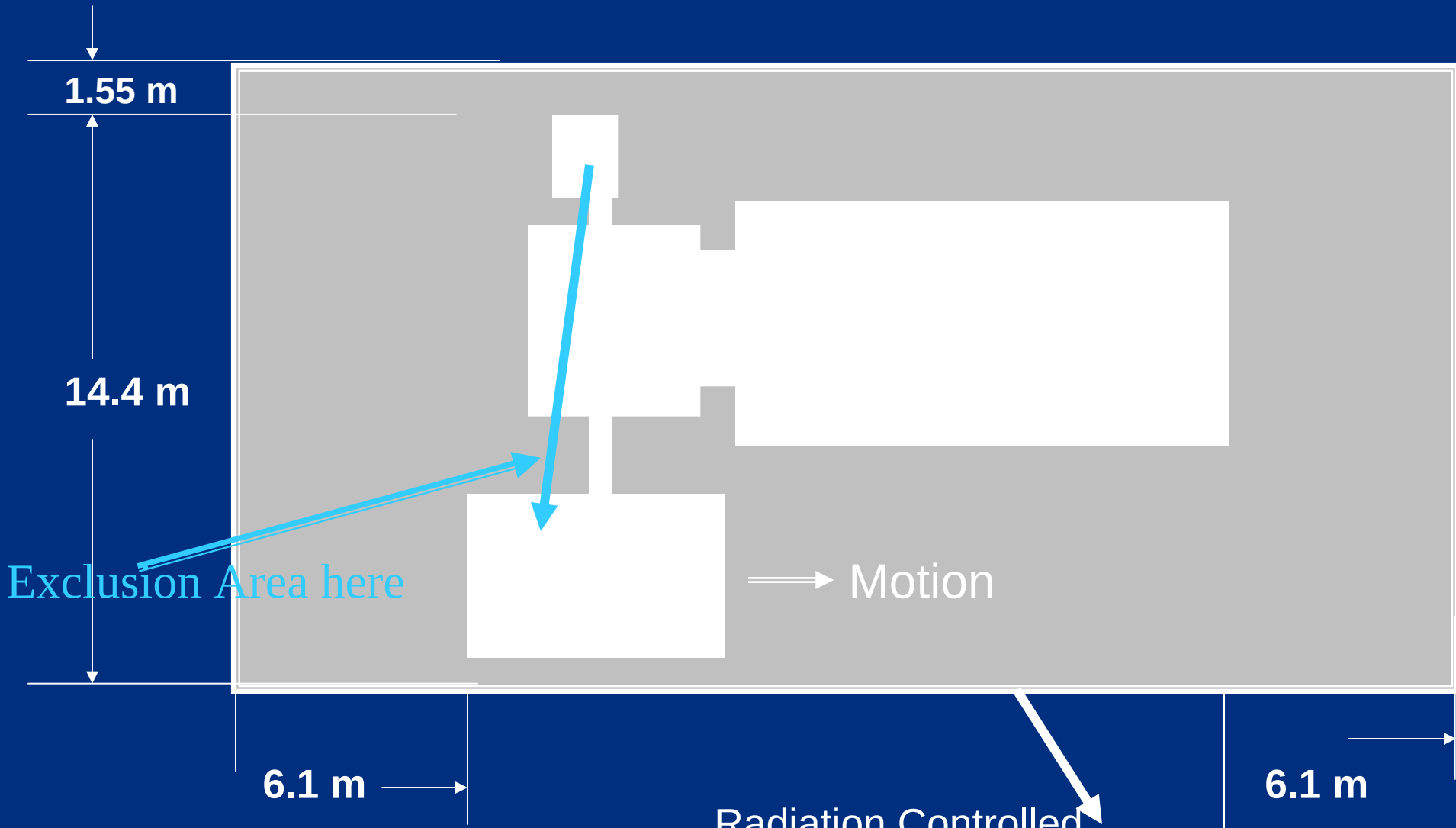
Rolling Scan



Radiation Portal Monitor System

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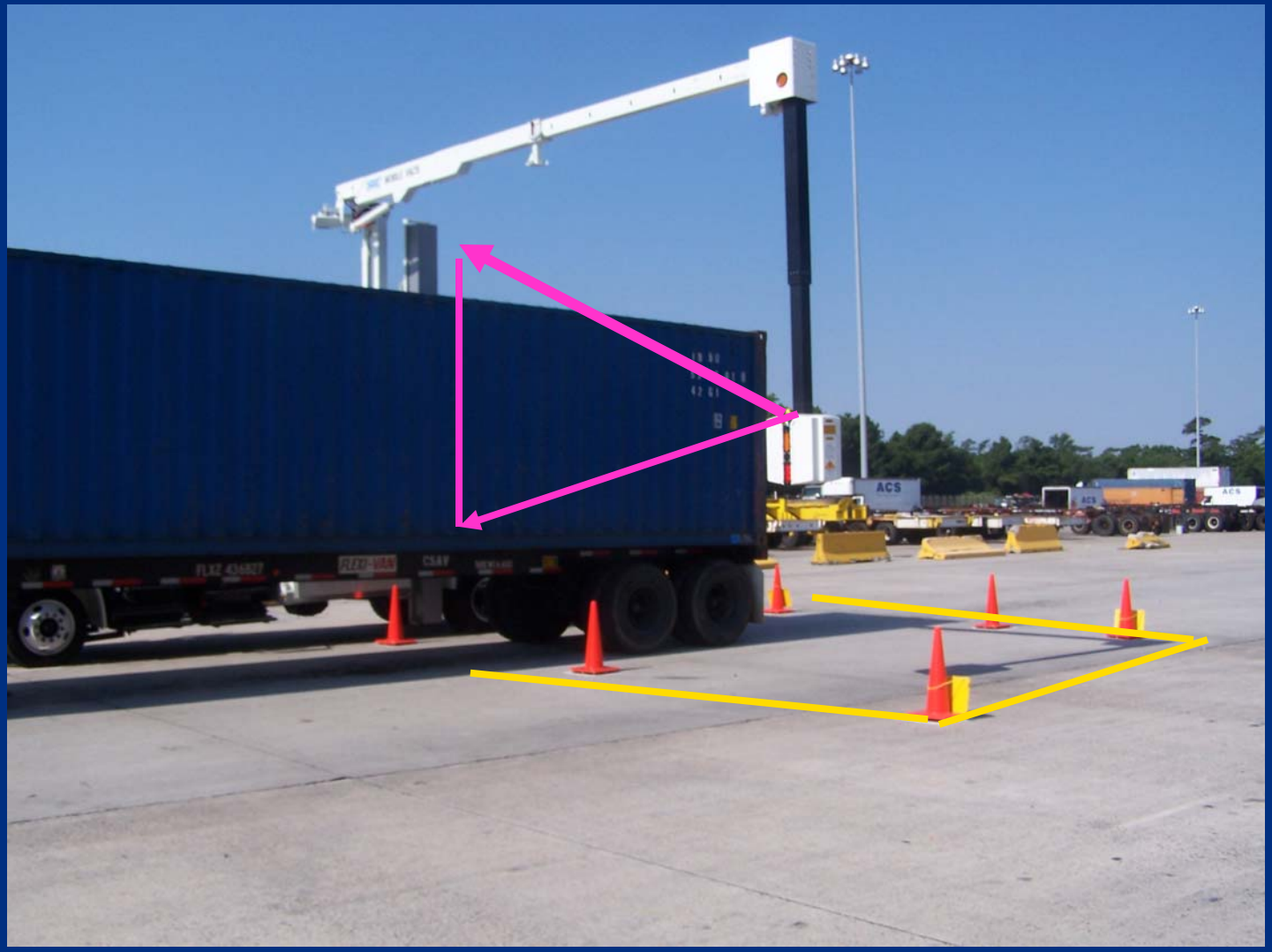
SAIC MOBILE VACIS
CBP
1711


1711


ACS



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Rapiscan
systems


Rapiscan
systems

Gamma Ray Inspection System

("Gards" with Cobalt-60)

Rail Vehicle and Cargo Inspection System (Early models have Cesium-137; later models have Cobalt-60)

Rail Vehicle and Cargo Inspection System (Early models have Cesium-137; later models have Cobalt-60)

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CAUTION
RADIATION AREA
RADIATION MAY BE PRESENT
WHENEVER RED INDICATOR IS ON.
NO ENTRY INTO THIS AREA IS PERMITTED
WHEN RED INDICATOR IS ILLUMINATED.
PRECAUCIÓN
ÁREA DE RADIACIÓN
RADIACIÓN ESTÁ PRESENTE
CUANDO LA LUZ ROJA ESTÁ PRENDIDA
NO ES PERMITIDO ENTRAR A ESTA
ÁREA CUANDO LA LUZ ROJA ESTÁ PRENDIDA

Pallet Vehicle and Cargo Inspection System

(with Cobalt-60)

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Portal Vehicle and Cargo Inspection System

(Cesium-137)

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Portal Vehicle and Cargo Inspection System

(Cesium-137)

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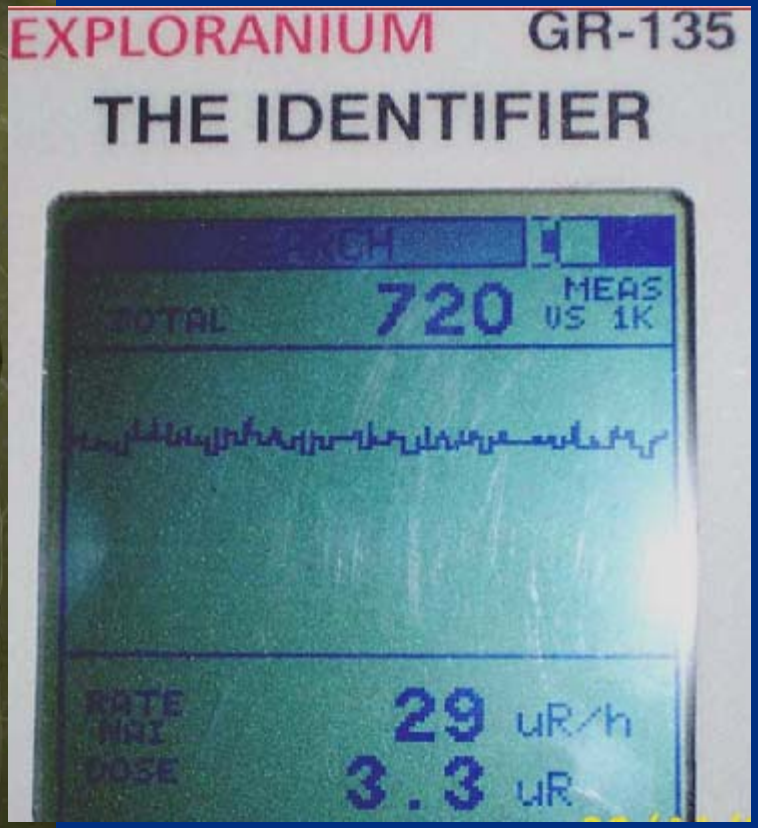
Standard Ionization Meter
(Victoreen 450P and the newer 451P)

Radiation Isotope Identification Device



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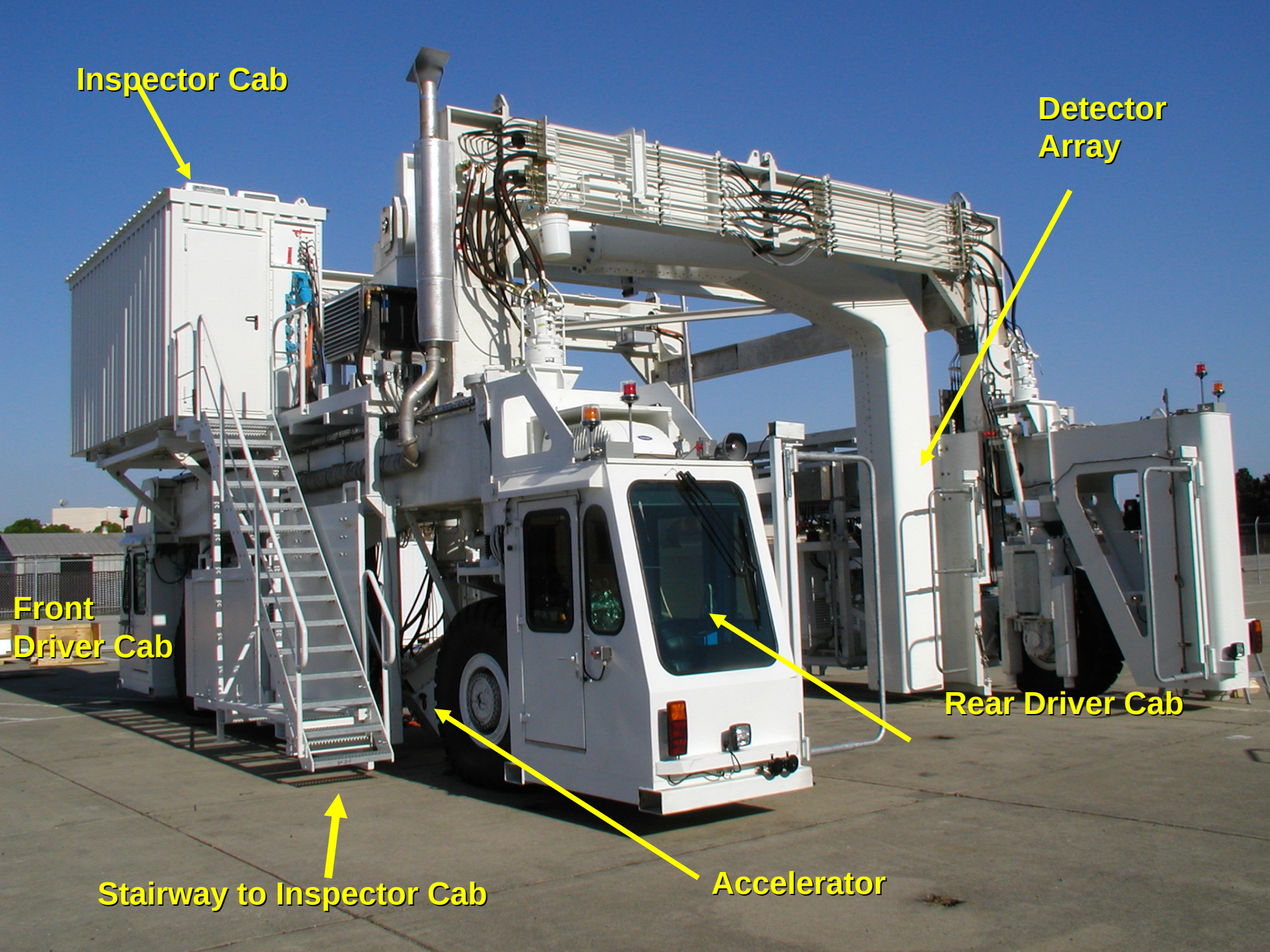
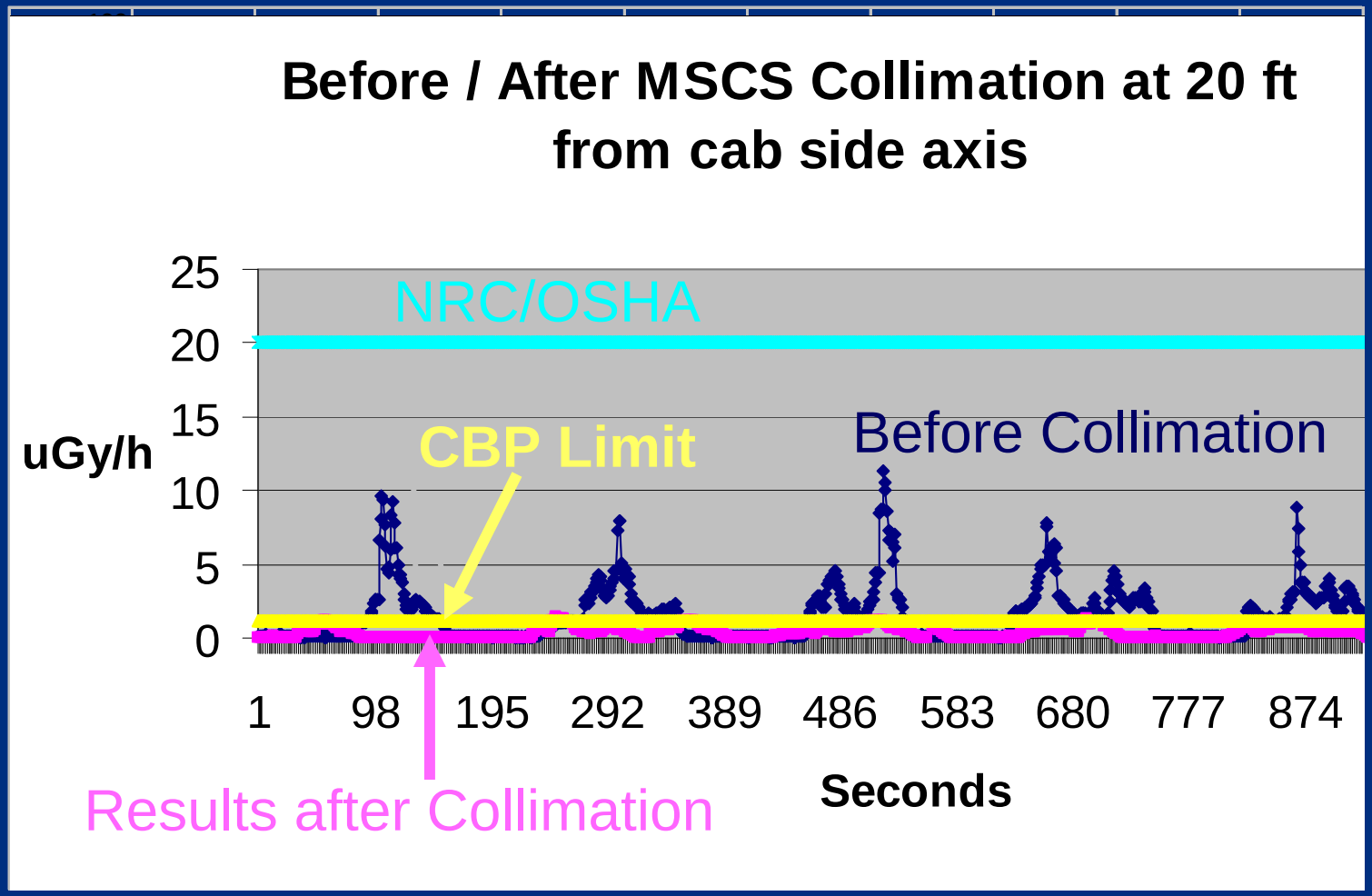
Z-Backscatter X-Ray System

Mobile Sea Container Accelerator System


Inspector Cab
Detector Array
Front Driver Cab
Rear Driver Cab
Stairway to Inspector Cab
Accelerator

Mobile Sea Container Accelerator System


Before / After MSCS Collimation at 20 ft from cab side axis
25
20
15
10
5
0
uGy/h
NRC/OSHA
CBP Limit
Before Collimation
1
98
195
292
389
486
583
680
777
874
Seconds
Results after Collimation


HCV MOBILE

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HCV MOBIL

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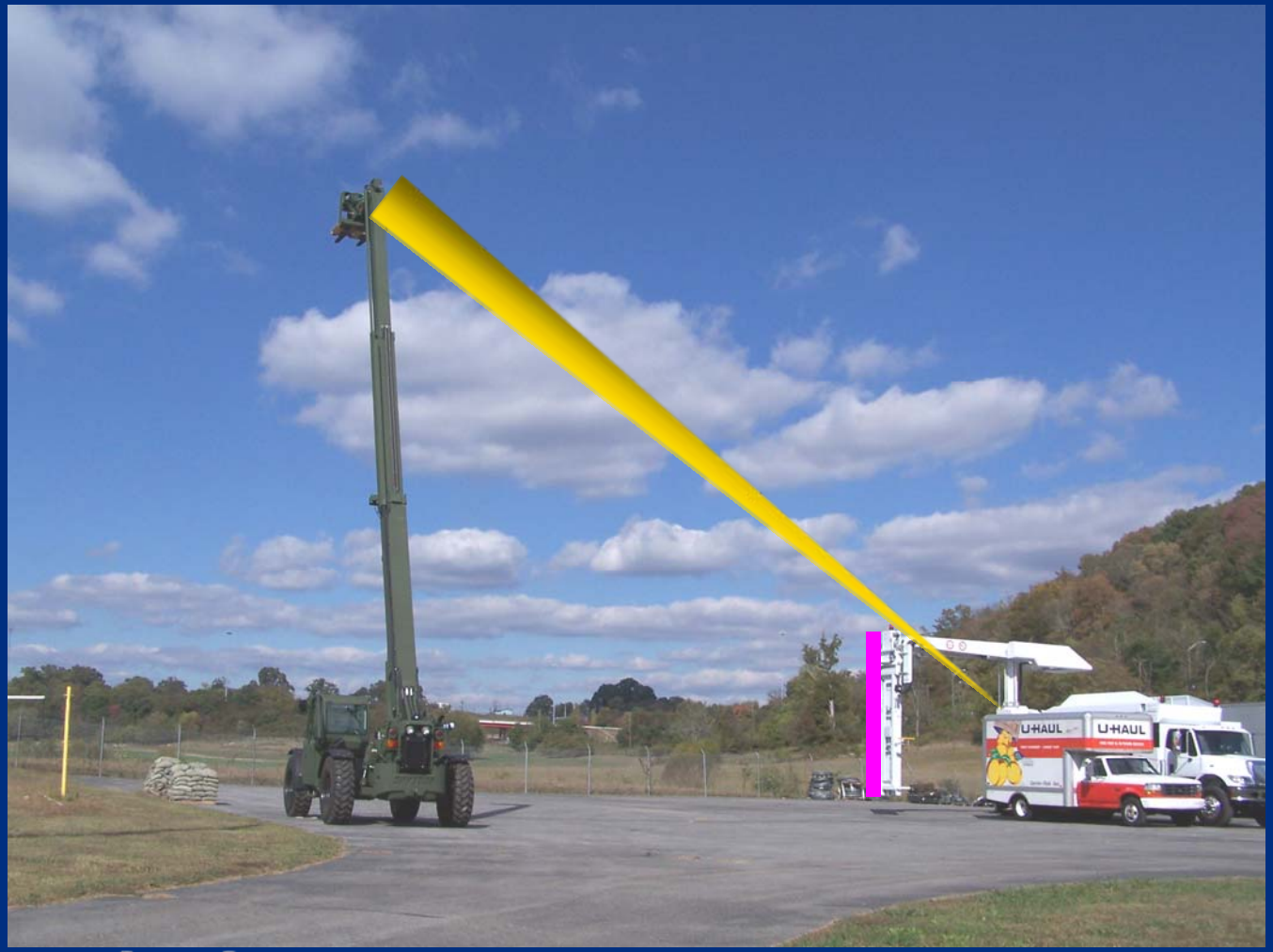

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Rail Gantry Accelerator System

(BIR)

Sources For Training

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Program Update

CBP Officer Training
+ Sources
+ New RPMs and reach back
+ Equipment expansion

CBP Radiation Safety Program Growth
+ Additional Staffing
+ NRC and Canadian License

Richard.T.Whitman @ DHS.GOV

(317) 614 – 4843 desk

(317) 945-6423 cell

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