U.S. Department of Homeland Security
601 South 12th Street
Arlington, VA 20598-6017

Transportation Security Administration

July 22, 2011

Ms. Susan Tashiro
Federal Security Director
Transportation Security Administration
Dulles International Airport (IAD)

Dear Ms. Tashiro:

The TSA Office of Occupational Safety, Health, and Environment (OSHE) is sponsoring an independent radiation protection survey project of general-use backscatter x-ray advanced imaging technology (AIT) systems and cabinet x-ray systems through an interagency agreement with the U.S. Army Public Health Command (USAPHC). This survey project is not to be confused with the radiation surveys performed during preventive maintenance checks. The annual equipment inspections are conducted by certified equipment maintenance personnel under specific testing conditions, whereas the survey project is conducted by USAPHC personnel under normal operating conditions; e.g., baggage flow-through or passenger screening with TSOs in attendance.

As part of the survey project, a radiation protection survey of the general-use backscatter x-ray AIT used at TSA IAD was conducted on April 14-15, 2011, by a team of certified health physicists from USAPHC's Health Physics Program, Army Institute of Public Health. The purpose of the survey was to ensure that the general-use backscatter x-ray AIT systems comply with the requirements of ANSI/HPS N43.17-2009 and to identify any health hazards associated with the x-ray systems. No surveys were performed for cabinet x-ray systems at this time.

General-use Backscatter X-ray AIT Systems

A total of 16 general-use backscatter x-ray AIT were evaluated and found to be in compliance with the radiation dose limits specified in ANSI/HPS N43.17-2009. There are no health hazards associated with the use of these general-use backscatter x-ray AIT systems provided the appropriate operating procedures are followed.

The surveyed AIT systems were also in compliance with the other requirements of the ANSI/HPS standard. However, the survey officers noted a number of deficiencies during the surveys that require attention; for example, the maintenance service provider's survey date was not posted on 13 AIT systems. More importantly, a wing was either not mounted correctly or was loose on two of the systems. These findings are described on page 2 of the attached report and in applicable survey reports (Enclosure 1 of report).

Your early attention to correcting the identified findings is requested. Please contact the TSA Service Response Center at 1-800-820-8535 for assistance.

If you have questions or comments about the report's contents, please direct them to me at [redacted]

Sincerely,

Jill M. Segraves

Jill Segraves, CSP
Director
Office of Occupational Safety, Health, and Environment

cc: Mr. Mike Keane, Deputy Federal Security Director
Ms. Christine Halfacre, Chief of Staff, Office of Security Technology

Enclosure: TSA IAD Radiation Protection Survey Report, dated 6 June 2011

DEPARTMENT OF THE ARMY
US ARMY INSTITUTE OF PUBLIC HEALTH
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

Health Physics Program

JUN 06 2011

Ms. Jill Segraves
Transportation Security Administration
TSA-170SHE
601 South 12th Street
Arlington, Virginia 22202

Dear Ms. Segraves:

This letter is in reference to the Memorandum of Agreement between the US Army Medical Command and the Transportation Security Administration (TSA), signed September 10, 2008; electronic mail message, subject: .2400.2.1 Radiation Safety Surveys, 4 April 2011; and Title 21, Code of Federal Regulations (CFR), Subchapter J.

A radiation protection survey was performed on 14-15 April 2011 at Dulles International Airport (IAD), Chantilly, VA, Project No. 26-MF-0EJG-11. The survey was performed to:

a. Evaluate the advanced imaging technology (AIT) x-ray systems to ensure compliance with the requirements of American National Standards Institute/Health Physics Society (ANSI/HPS) N43.17-2009.

b. Identify any health hazards associated with the use of these x-ray systems.

c. Provide recommendations to assist in correcting any areas of noncompliance or health hazards.

The survey was performed by [redacted] Certified Health Physicist (CHP) and [redacted] CHP, Health Physics Program, Army Institute of Public Health (AIPH). A total of 16 AIT x-ray systems were evaluated for compliance with the requirements of ANSI/HPS N43.17-2009. The survey results for each system are provided in Enclosure 1.

All x-ray systems tested were found to be in compliance with the radiation dose limits specified in ANSI/HPS N43.17-2009. There are no health hazards associated with the use of these systems provided appropriate operating procedures are followed.

All systems were found to be in compliance with the other requirements of ANSI/HPS N43.17-2009.

In addition, the survey officers noted the following:

a. The maintenance service provider's survey date was not posted on the following systems:

- West Checkpoint, Lane 5/6 (SN S51039011)
- West Checkpoint, Lane 7/8 (SN S51039010)
- West Checkpoint, Lane 9/10 (SN S51039008)
- West Checkpoint, Lane 11/12 (SN S51039009)
- West Checkpoint, Lane 13/14 (SN S51039007)
- East Checkpoint, Lane 19/20 (SN S51038012)
- East Checkpoint, Lane 21/22 (SN S51039001)
- East Checkpoint, Lane 27/28 (SN S51039004)
- East Checkpoint, Lane 29/30 (SN S51039005)
- East Checkpoint, Lane 31/32 (SN S51039006)
- Diamond Checkpoint, Lane 33/34 (SN S51038010)
- FIS Checkpoint, Lane 40/41 (SN S51039013)
- FIS Checkpoint, Lane 44/45 (SN S51039012)

b. East Checkpoint, Lane 21/22 (SN S51039001): The wing on the master unit, exit side was mounted backwards.

c. Employee Checkpoint, Lane 37/38 (SN S51038011): The wing on the slave unit, exit side was loose and missing several screws.

Based on measurements at the inspection zone boundary, it is estimated that an individual would need to be present at the inspection zone boundary for 1,000,000 screenings in one year to reach the public dose limit. Assuming 600 screenings are accomplished each hour, then an individual would need to be at the inspection zone boundary for 1666 hours of the work year to reach the public dose limit of 100 millirem per year.

Long term measurements using area dosimeters are being made on four AIT systems (West Checkpoint, Lane 11/12; West Checkpoint, Lane 13/14; East Checkpoint, Lane 23/24; and East Checkpoint, Lane 27/28). Six dosimeters were mounted on each system. The area dosimeters will be collected in approximately two months. The measurement data from the area dosimeters along with the number of screenings on each of the four monitored systems over this time period will be used to refine the estimates of the potential dose to a Transportation Security Officers (TSO) who operates or works near these systems. The results of these measurements will be provided in a separate report.

A Department of Homeland Security Inspector General (DHS-IG) Team visited IAD on 14 April 2011 to obtain information about TSA's AIT systems and to observe surveys of the backscatter AIT systems. The five member team was lead by Chief Inspector, Ms. Deborah Outten-Mills, Office of the Inspector General, DHS. The survey team provided the DHS-IG Team with an overview of radiation safety, the ANSI N43.17-2009

standard, TSA's backscatter AIT systems, and the surveys performed to demonstrate compliance with the ANSI N43.17-2009 standard.

The survey officers discussed the survey results with Mr. Mike Keane, Deputy Federal Security Director (FSD); Mr. David Grahan, Assistant FSD - Screening; Mr. Don Cahoon, Transportation Security Manager; and Supervisory Transportation Security Officer (STSO)/ Collateral Duty Safety Officer, Mr. Antonio Marquez on 15 April 2011. A copy of the survey notes is provided in Enclosure 2.

For more information concerning the survey, please contact the AIPH, Health Physics Program, at [redacted].

Sincerely,

[redacted], CIH
Portfolio Director
Occupational Health Sciences

Enclosures

Survey Results for 16 AIT X-Ray Systems

Encl 1

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	West Checkpoint, Lane 5/6				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039011	Sep-2010

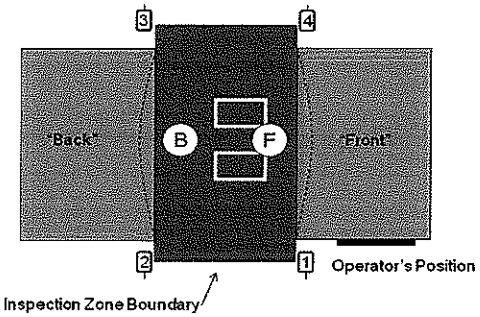
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side	Exposure (X) "Back" Side
a	7.15 µR	7.43 µR
b	7.28 µR	7.37 µR
c	7.15 µR	7.37 µR
d	7.30 µR	7.37 µR
e	7.16 µR	7.43 µR
AVG	7.21 µR	7.39 µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.8 µrem

or

0.028 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side	Exposure (X) "Back" Side
0	1.46 µR	1.79 µR
0	1.46 µR	1.85 µR
1	0.80 µR	1.06 µR
1	0.86 µR	0.99 µR
1.5	0.73 µR	0.80 µR
1.5	0.66 µR	0.73 µR

HVL "Front" Side: 1.4 mm Al

HVL "Back" Side: 1.2 mm Al

Conversion Factor: 0.150

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	West Checkpoint, Lane 7/8				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039010	Sep-2010

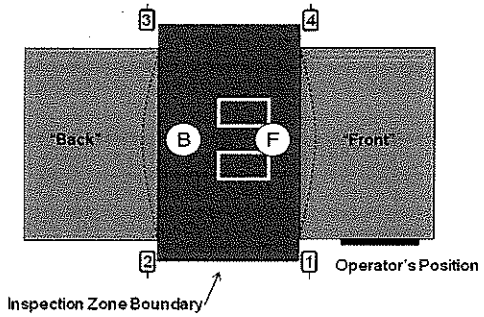
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.54	µR	6.76	µR
b	6.60	µR	6.74	µR
c	6.54	µR	6.68	µR
d	6.61	µR	6.76	µR
e	6.54	µR	6.83	µR
AVG	6.57	µR	6.75	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.2 µrem

or

0.022 µSv

RESULT: PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.26	µR	1.26	µR
0	1.33	µR	1.26	µR
1	0.73	µR	0.66	µR
1	0.73	µR	0.67	µR
1.5	0.53	µR	0.53	µR
1.5	0.46	µR	0.60	µR

HVL "Front" Side: 1.2 mm Al

HVL "Back" Side: 1.2 mm Al

Conversion Factor: 0.128

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT: PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	West Checkpoint, Lane 9/10				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039008	Sep-2010

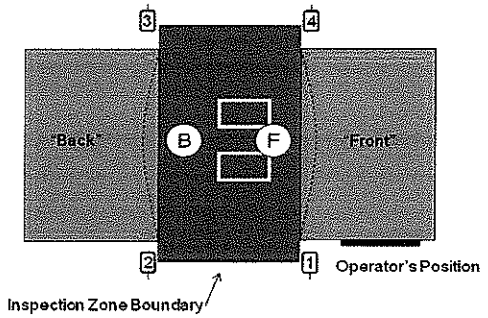
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)

Location	Scan 1		Scan 2		Scan 3		Average	
1	0.07	µR	0.00	µR	0.00	µR	0.02	µR
2	0.13	µR	0.13	µR	0.07	µR	0.11	µR
3	0.07	µR	0.07	µR	0.06	µR	0.07	µR
4	0.07	µR	0.07	µR	0.13	µR	0.09	µR

Measurements made with Instruments #1 & #2

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.18	µR	6.25	µR
b	6.18	µR	6.31	µR
c	6.11	µR	6.25	µR
d	6.11	µR	6.24	µR
e	6.17	µR	6.31	µR
AVG	6.15	µR	6.27	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.0 µrem

or

0.020 µSv

RESULT: PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.27	µR	1.20	µR
0	1.27	µR	1.26	µR
1	0.67	µR	0.67	µR
1	0.60	µR	0.67	µR
1.5	0.53	µR	0.53	µR
1.5	0.60	µR	0.52	µR

HVL "Front" Side: 1.0 mm Al

HVL "Back" Side: 1.2 mm Al

Conversion Factor: 0.129

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT: PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program
U.S. Army Public Health Command (Provisional)
Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	West Checkpoint, Lane 11/12				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	*Model*	*Serial No.*	*Cal. Due*
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	*Model*	*Serial No.*	*Manuf. Date*
Rapiscan	Secure 1000SP	S51039009	Sep-2010

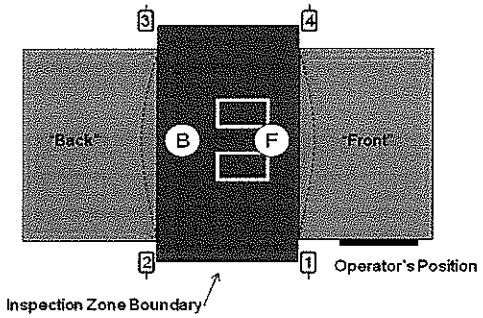
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	*Requirement*
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]
(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	*Scan 1*	*Scan 2*	*Scan 3*	*Average*
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	*Exposure (X) "Front" Side*	*"Back" Side*
a	6.02 µR	5.76 µR
b	6.02 µR	5.69 µR
c	5.96 µR	5.71 µR
d	6.03 µR	5.63 µR
e	5.89 µR	5.76 µR
AVG	5.98 µR	5.71 µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:
1.9 µrem
or
0.019 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	*Exposure (X) "Front" Side*	*"Back" Side*
0	1.06 µR	1.06 µR
0	1.06 µR	1.06 µR
1	0.60 µR	0.53 µR
1	0.53 µR	0.53 µR
1.5	0.47 µR	0.46 µR
1.5	0.47 µR	0.46 µR

HVL "Front" Side: 1.2 mm Al
HVL "Back" Side: 1.0 mm Al
Conversion Factor: 0.129
Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.
OSL Apr-Jun 2011 dosimeters 1734 to 1739 mounted on system with field IDs of 1-1 to 1-6, respectively.

Additional instruments used:

	Manufacturer	*Model*	*Serial No.*	*Cal. Due*
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	West Checkpoint, Lane 13/14				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039007	Sep-2010

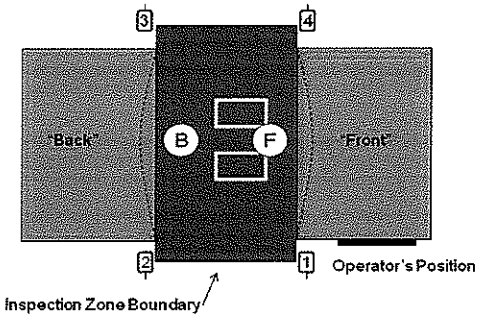
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)

Location	Scan 1		Scan 2		Scan 3		Average	
1	0.00	µR	0.06	µR	0.07	µR	0.04	µR
2	0.07	µR	0.06	µR	0.14	µR	0.09	µR
3	†	µR	†	µR	†	µR	†	µR
4	0.06	µR	0.06	µR	0.07	µR	0.06	µR

†*Location #3 was not accessible due to physical barrier.*

Measurements made with Instruments #1 & #2

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.29	µR	6.96	µR
b	6.49	µR	6.89	µR
c	6.69	µR	6.89	µR
d	6.75	µR	6.89	µR
e	6.69	µR	6.90	µR
AVG	6.58	µR	6.91	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.3 µrem

or

0.023 µSv

RESULT: PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.27	µR	1.47	µR
0	1.20	µR	1.40	µR
1	0.67	µR	0.80	µR
1	0.60	µR	0.80	µR
1.5	0.47	µR	0.60	µR
1.5	0.47	µR	0.60	µR

HVL "Front" Side: 1.0 mm Al

HVL "Back" Side: 1.2 mm Al

Conversion Factor: 0.131

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT: PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

OSL Apr-Jun 2011 dosimeters 1740 to 1745 mounted on/near system with field IDs of 2-1 to 2-6, respectively.

Dosimeters 1742 and 1743 (field IDs 2-3 and 2-4) mounted on gate post physical barrier just outside of entrance side wings.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 19/20				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51038012	Sep-2010

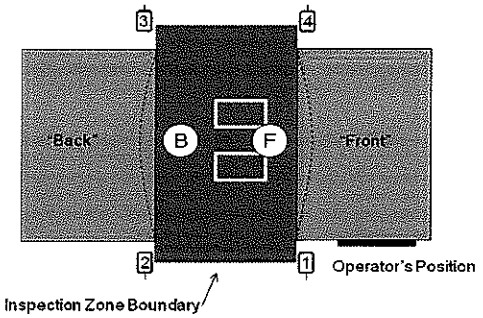
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.26	µR	6.59	µR
b	6.33	µR	6.53	µR
c	6.26	µR	6.52	µR
d	6.26	µR	6.53	µR
e	6.26	µR	6.59	µR
AVG	6.27	µR	6.55	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]: 1.9 µrem or 0.019 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.05	µR	1.31	µR
0	0.98	µR	1.31	µR
1	0.52	µR	0.71	µR
1	0.52	µR	0.65	µR
1.5	0.39	µR	0.52	µR
1.5	0.39	µR	0.52	µR

HVL "Front" Side: 1.0 mm Al

HVL "Back" Side: 1.1 mm Al

Conversion Factor: 0.118

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 21/22				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039001	Sep-2010

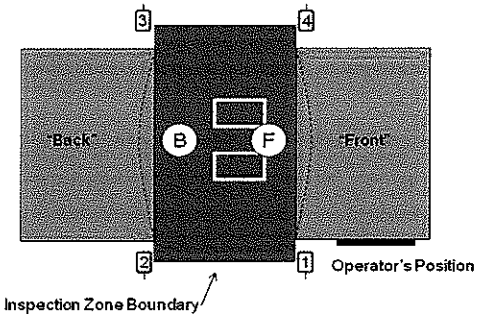
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.34	µR	6.81	µR
b	6.27	µR	6.87	µR
c	6.35	µR	6.68	µR
d	6.27	µR	6.74	µR
e	6.21	µR	6.81	µR
AVG	6.29	µR	6.78	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.6 µrem

or

0.026 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.26	µR	1.26	µR
0	1.32	µR	1.26	µR
1	0.66	µR	0.66	µR
1	0.79	µR	0.66	µR
1.5	0.59	µR	0.46	µR
1.5	0.66	µR	0.47	µR

HVL "Front" Side: 1.4 mm Al

HVL "Back" Side: 1.1 mm Al

Conversion Factor: 0.153

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Wing at location #1 in the Survey Diagram was mounted backwards.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 23/24				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039002	Sep-2010

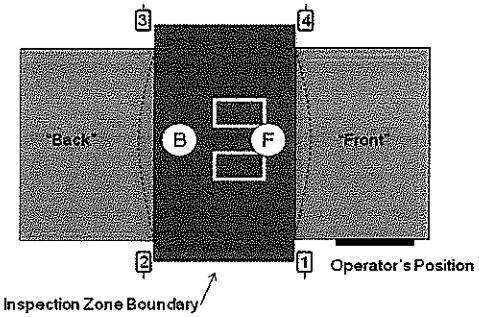
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	11 Nov 2010		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.26	µR	7.20	µR
b	6.46	µR	7.27	µR
c	6.53	µR	7.14	µR
d	6.47	µR	7.27	µR
e	6.47	µR	7.14	µR
AVG	6.44	µR	7.20	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.3 µrem

or

0.023 µSv

RESULT: PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.05	µR	1.38	µR
0	1.05	µR	1.45	µR
1	0.59	µR	0.72	µR
1	0.53	µR	0.79	µR
1.5	0.46	µR	0.59	µR
1.5	0.46	µR	0.59	µR

HVL "Front" Side: 1.2 mm Al

HVL "Back" Side: 1.1 mm Al

Conversion Factor: 0.128

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT: PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

OSL Apr-Jun 2011 dosimeters 1746 to 1751 mounted on system with field IDs of 3-1 to 3-6, respectively.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 25/26				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039003	Sep-2010

Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	11 Nov 2010		

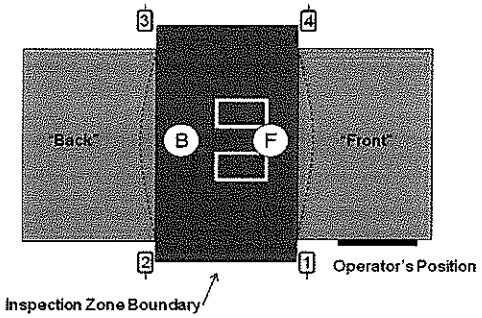
VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)

Y	N	Requirement
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)

Location	Scan 1		Scan 2		Scan 3		Average	
1	0.00	µR	0.07	µR	0.07	µR	0.05	µR
2	0.06	µR	0.06	µR	0.06	µR	0.06	µR
3	0.07	µR	0.07	µR	0.13	µR	0.09	µR
4	0.07	µR	0.07	µR	0.07	µR	0.07	µR

Measurements made with Instruments #1 & #2

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.89	µR	6.82	µR
b	6.69	µR	6.89	µR
c	6.82	µR	6.89	µR
d	6.69	µR	6.82	µR
e	6.82	µR	6.82	µR
AVG	6.78	µR	6.85	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

2.4 µrem

or

0.024 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.12	µR	0.99	µR
0	1.19	µR	0.92	µR
1	0.66	µR	0.53	µR
1	0.60	µR	0.59	µR
1.5	0.46	µR	0.39	µR
1.5	0.46	µR	0.46	µR

HVL "Front" Side: 1.1 mm Al

HVL "Back" Side: 1.3 mm Al

Conversion Factor: 0.142

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program
U.S. Army Public Health Command (Provisional)
Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 27/28				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039004	Sep-2010

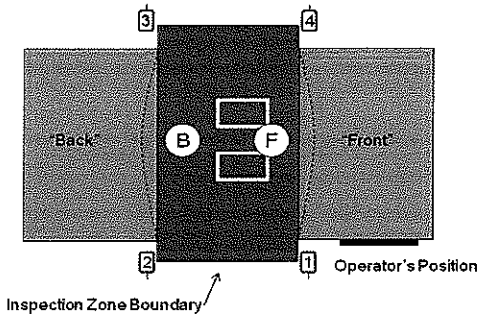
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]
(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side	Exposure (X) "Back" Side
a	6.44 µR	6.97 µR
b	6.50 µR	6.97 µR
c	6.43 µR	6.97 µR
d	6.44 µR	6.97 µR
e	6.44 µR	6.97 µR
AVG	6.45 µR	6.97 µR
Energy Correctin Factor	1.25	

Reference Effective Dose per Screening (max 25 µrem)[1]:
2.3 µrem
or
0.023 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side	Exposure (X) "Back" Side
0	1.06 µR	1.25 µR
0	1.06 µR	1.31 µR
1	0.59 µR	0.65 µR
1	0.59 µR	0.65 µR
1.5	0.46 µR	0.52 µR
1.5	0.46 µR	0.59 µR

HVL "Front" Side 1.2 mm Al
HVL "Back" Side 1.0 mm Al
Conversion Factor 0.134
Min. Filtration[1] 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.
OSL Apr-Jun 2011 dosimeters 1752 to 1757 mounted on system with field IDs of 4-1 to 4-6, respectively.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program
U.S. Army Public Health Command (Provisional)
Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 29/30				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	851039005	Sep-2010

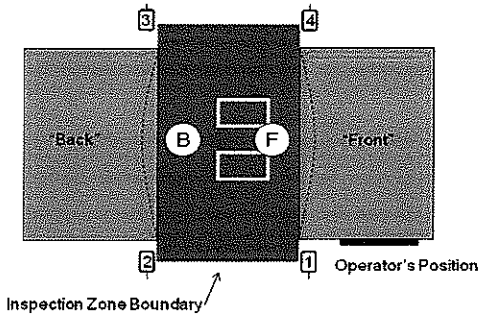
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]
(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.40	µR	6.00	µR
b	6.41	µR	6.00	µR
c	6.40	µR	6.00	µR
d	6.40	µR	5.94	µR
e	6.47	µR	6.00	µR
AVG	6.42	µR	5.99	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:
2.0 µrem
or
0.020 µSv

RESULT: PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.05	µR	1.06	µR
0	1.05	µR	1.06	µR
1	0.53	µR	0.53	µR
1	0.53	µR	0.59	µR
1.5	0.46	µR	0.46	µR
1.5	0.46	µR	0.46	µR

HVL "Front" Side: 1.0 mm Al
HVL "Back" Side: 1.1 mm Al
Conversion Factor: 0.125
Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT: PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program
U.S. Army Public Health Command (Provisional)
Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	East Checkpoint, Lane 31/32				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039006	Sep-2010

Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

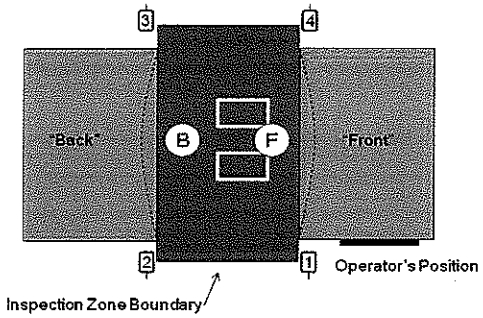
VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)

Y	N	Requirement
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]
(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	7.67	µR	7.93	µR
b	7.81	µR	8.00	µR
c	7.66	µR	7.87	µR
d	7.74	µR	8.07	µR
e	7.74	µR	7.94	µR
AVG	7.72	µR	7.96	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:
2.4 µrem
or
0.024 µSv

RESULT: PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.12	µR	1.84	µR
0	1.12	µR	1.84	µR
1	0.59	µR	0.92	µR
1	0.59	µR	0.98	µR
1.5	0.46	µR	0.72	µR
1.5	0.46	µR	0.79	µR

HVL "Front" Side: 1.1 mm Al
HVL "Back" Side: 1.1 mm Al
Conversion Factor: 0.122
Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT: PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program
U.S. Army Public Health Command (Provisional)
Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	Diamond Checkpoint, Lane 33/34				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51038010	Sep-2010

Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

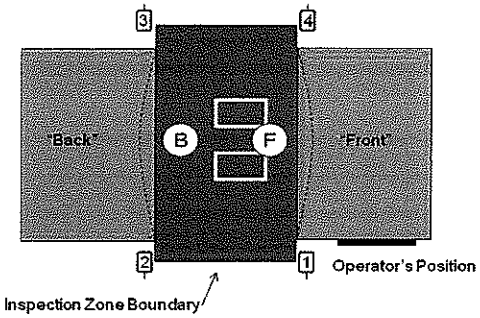
VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be initiated? (ANSI N43.17-2009, paragraph 7.2.1.a)

Y	N	Requirement
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]
(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)

Location	Scan 1		Scan 2		Scan 3		Average	
1	0.20	µR	0.20	µR	0.20	µR	0.20	µR
2	0.00	µR	0.00	µR	0.07	µR	0.02	µR
3	0.00	µR	0.00	µR	0.07	µR	0.02	µR
4	†	µR	†	µR	†	µR	†	µR

†*Location #4 was not accessible due to physical barrier.*

Measurements made with Instruments #1 & #2

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.18	µR	5.24	µR
b	6.18	µR	5.17	µR
c	6.11	µR	5.23	µR
d	6.17	µR	5.18	µR
e	6.26	µR	5.18	µR
AVG	6.18	µR	5.20	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]: 2.5 µrem or 0.025 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.33	µR	1.20	µR
0	1.33	µR	1.20	µR
1	0.80	µR	0.66	µR
1	0.73	µR	0.67	µR
1.5	0.53	µR	0.60	µR
1.5	0.60	µR	0.60	µR

HVL "Front" Side: 1.2 mm Al
HVL "Back" Side: 1.5 mm Al
Conversion Factor: 0.165
Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program
U.S. Army Public Health Command (Provisional)
Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	Employee Checkpoint, Lane 37/38				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51038011	Sep-2010

Certified	NA	Place of Manufacture	Torrance, CA
Service Provider Survey Date	28 Oct 2010		

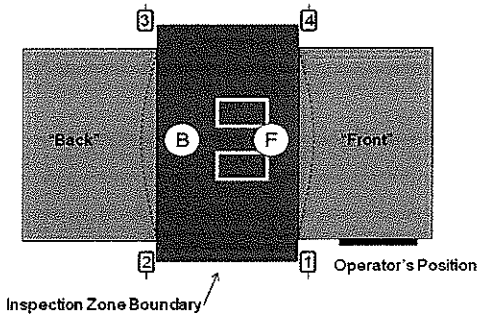
VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be initiated? (ANSI N43.17-2009, paragraph 7.2.1.a)

Y	N	Requirement
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]
(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	5.83	µR	6.30	µR
b	5.82	µR	6.30	µR
c	5.83	µR	6.38	µR
d	5.77	µR	6.24	µR
e	5.96	µR	6.37	µR
AVG	5.84	µR	6.32	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]: 2.1 µrem or 0.021 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.34	µR	1.13	µR
0	1.34	µR	1.14	µR
1	0.73	µR	0.60	µR
1	0.67	µR	0.67	µR
1.5	0.53	µR	0.46	µR
1.5	0.53	µR	0.53	µR

HVL "Front" Side: 1.1 mm Al
HVL "Back" Side: 1.2 mm Al
Conversion Factor: 0.135
Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.
Wing at location #2 in the Survey Diagram was loose and missing several screws.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	FIS Checkpoint, Lane 40/41				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039013	Sep-2010

Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

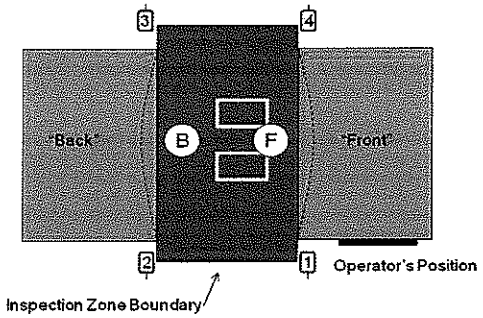
VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be initiated? (ANSI N43.17-2009, paragraph 7.2.1.a)

Y	N	Requirement
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	4.45	µR	5.52	µR
b	4.72	µR	5.58	µR
c	4.72	µR	5.45	µR
d	4.86	µR	5.51	µR
e	4.86	µR	5.52	µR
AVG	4.72	µR	5.52	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

1.6 µrem

or

0.016 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.25	µR	0.92	µR
0	1.26	µR	0.92	µR
1	0.66	µR	0.46	µR
1	0.66	µR	0.46	µR
1.5	0.46	µR	0.39	µR
1.5	0.46	µR	0.39	µR

HVL "Front" Side: 1.1 mm Al

HVL "Back" Side: 1.0 mm Al

Conversion Factor: 0.118

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Worksheet - AIT X-Ray Systems

Health Physics Program

U.S. Army Public Health Command (Provisional)

Aberdeen Proving Ground, Maryland 21010-5403

SURVEY DATA

Project No.	26-MF-0EJG-11
Survey Date	14-15 April 2011
Surveyor(s)	[redacted]

SURVEY LOCATION

Location	FIS Checkpoint, Lane 44/45				
Organization	Dulles International Airport				
Street Address	Aviation Dr. & Autopilot Dr.				
City/Installation	Sterling	State	VA	ZIP	20166

INSTRUMENTS USED

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #1	Radcal	9010	90-3290	17 Mar 2012
Instrument #2	Radcal	10X5-1800	10302	17 Mar 2012
Instrument #3	WB Johnson	TVX-2000	40155	Resp Chkd*

SYSTEM INFORMATION

Manufacturer	Model	Serial No.	Manuf. Date
Rapiscan	Secure 1000SP	S51039012	Sep-2010

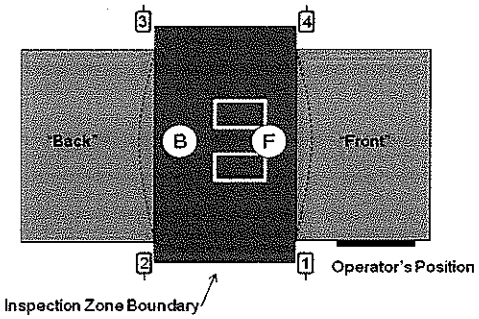
Certified	NA	*Place of Manufacture*	Torrance, CA
Service Provider Survey Date	none found		

VISUAL INSPECTION

Y	N	Requirement
x		Key activated control with key capture? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.c)
x		"Caution: X-Rays Produced When Energized" label present at control to initiate scan? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.d)
x		Technique factors preset for each mode of operation? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.b)
x		Means to initiate emission of radiation other than an interlock or main power control? (ANSI N43.17-2009, paragraph 7.2.1.d)
x		Means to terminate emission of radiation other than an interlock? (ANSI N43.17-2009, paragraph 7.2.1.e)
x		Scan in progress indicator visible for any location from which a scan can be inititiated? (ANSI N43.17-2009, paragraph 7.2.1.a)
x		At least one lighted scan in progress indicator visible from the inspection zone? (ANSI N43.17-2009, paragraph 7.2.1.b)
x		X-ray emission terminates after a present time or exposure? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.2.e)
x		Operators have a clear view of the scanning area? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.f)
x		Tool or key required to open or remove access panels? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.2.1.i)
x		User provided with required information? (21 CFR 1020.31(j); ANSI N43.17-2009, paragraph 7.5)

NT=not tested; NA=not applicable.

SURVEY DIAGRAM



SCANNING MEASUREMENTS

Scanning below action levels? Yes [x] No [ ]

(If no, explain in comments)

Inspection zone boundary scanned with Instrument #3.

SCATTERED RADIATION (Optional)†

Location	Scan 1	Scan 2	Scan 3	Average
1	µR	µR	µR	µR
2	µR	µR	µR	µR
3	µR	µR	µR	µR
4	µR	µR	µR	µR

†*Measurements not performed because passengere were not being screened with this system when the survey team was present.*

DOSE PER SCREENING

Trial	Exposure (X) "Front" Side		"Back" Side	
a	6.40	µR	6.14	µR
b	6.53	µR	6.07	µR
c	6.53	µR	6.21	µR
d	6.60	µR	6.27	µR
e	6.47	µR	6.15	µR
AVG	6.51	µR	6.17	µR

Energy Correctin Factor: 1.25

Reference Effective Dose per Screening (max 25 µrem)[1]:

1.8 µrem

or

0.018 µSv

RESULT PASS

Measurements made with Instruments #1 & #2

BEAM QUALITY

mm Al	Exposure (X) "Front" Side		"Back" Side	
0	1.44	µR	0.92	µR
0	1.44	µR	0.92	µR
1	0.72	µR	0.46	µR
1	0.72	µR	0.46	µR
1.5	0.52	µR	0.39	µR
1.5	0.52	µR	0.39	µR

HVL "Front" Side: 1.0 mm Al

HVL "Back" Side: 1.0 mm Al

Conversion Factor: 0.110

Min. Filtration[1]: 1.0 mm Al

[1] An HVL of 1 mm Al corresonds to a filtration of 1 mm Al for this system

RESULT PASS

Measurements made with Instruments #4 & #5

COMMENTS AND RECOMMENDATIONS

*Instrument was response checked on 13 and 15 April 2011.

Additional instruments used:

	Manufacturer	Model	Serial No.	Cal. Due
Instrument #4	Radcal	9010	90-3315	30 Jul 2011
Instrument #5	Radcal	10X5-1800	10357	30 Jul 2011

Survey Notes Provided on 15 April, 2011

Encl 2

MCHB-IP-OHP 15 April 2011

Exit Briefing Notes

1. Project Information.

   a. Radiation Protection Survey No. 26-MF-0EJG-11

   b. Survey dates: 14-15 April 2011

   c. Dulles International Airport (IAD), Chantilly, VA

   d. Survey Officer(s): [redacted] CHP and [redacted] CHP

2. Background Information.

   a. TSA Headquarters Contact: Jill Segraves, Director, Occupational Safety, Health, and Environment (OSHE), phone: [redacted]

   b. Airport Contacts:

      (1) Scott Fleming, Administrative Officer, Phone: [redacted]

      (2) Antonio Marquez, STSO, Phone: [redacted]

   c. Individuals assisting the survey team:

Name	Title/Position
[redacted]	Health Physicist, Consolidated Safety Services (CSS)
[redacted]	Project Manager, CSS
[redacted]	Safety Specialist, CSS
Donald Cahoon	Transportation Security Manager
Michael Nemser	Lead TSO
Brittany Johnson	Lead TSO
Tony Fajardo	TSO
Beatrice Thompson	TSO

   d. X-ray systems surveyed:

Model	Serial No.	Location
Rapiscan Secure 1000 SP	S51039011	West Checkpoint, Lane 5/6
Rapiscan Secure 1000 SP	S51039010	West Checkpoint, Lane 7/8
Rapiscan Secure 1000 SP	S51039008	West Checkpoint, Lane 9/10
Rapiscan Secure 1000 SP	S51039009	West Checkpoint, Lane 11/12
Rapiscan Secure 1000 SP	S51039007	West Checkpoint, Lane 13/14

Rapiscan Secure 1000 SP	S51038012	East Checkpoint, Lane 19/20
Rapiscan Secure 1000 SP	S51039001	East Checkpoint, Lane 21/22
Rapiscan Secure 1000 SP	S51039002	East Checkpoint, Lane 23/24
Rapiscan Secure 1000 SP	S51039003	East Checkpoint, Lane 25/26
Rapiscan Secure 1000 SP	S51039004	East Checkpoint, Lane 27/28
Rapiscan Secure 1000 SP	S51039005	East Checkpoint, Lane 29/30
Rapiscan Secure 1000 SP	S51039006	East Checkpoint, Lane 31/32
Rapiscan Secure 1000 SP	S51038010	Diamond Checkpoint, Lane 33/34
Rapiscan Secure 1000 SP	S51038011	Employee Checkpoint, Lane 37/38
Rapiscan Secure 1000 SP	S51039013	FIS Checkpoint, Lane 40/41
Rapiscan Secure 1000 SP	S51039012	FIS Checkpoint, Lane 44/45

3. Findings and Recommendations.

a. All x-ray personnel screening systems were found to be in compliance with the radiation dose limits of American National Standards Institute/Health Physics Society (ANSI/HPS) Standard N43.17-2009, Radiation Safety for Personnel Security Screening Systems Using X-Ray or Gamma Radiation.

b. All systems were found to be in compliance with the other requirements of ANSI/HPS N43.17-2009.

c. The following items were also noted during the surveys:

(1) The maintenance service provider's survey date was not posted on the following systems:

(a) West Checkpoint, Lane 5/6 (SN S51039011)

(b) West Checkpoint, Lane 7/8 (SN S51039010)

(c) West Checkpoint, Lane 9/10 (SN S51039008)

(d) West Checkpoint, Lane 11/12 (SN S51039009)

(e) West Checkpoint, Lane 13/14 (SN S51039007)

(f) East Checkpoint, Lane 19/20 (SN S51038012)

(g) East Checkpoint, Lane 21/22 (SN S51039001)

(h) East Checkpoint, Lane 27/28 (SN S51039004)

(i) East Checkpoint, Lane 29/30 (SN S51039005)

(j) East Checkpoint, Lane 31/32 (SN S51039006)

(k) Diamond Checkpoint, Lane 33/34 (SN S51038010)

(l) FIS Checkpoint, Lane 40/41 (SN S51039013)

(m) FIS Checkpoint, Lane 44/45 (SN S51039012)

(2) East Checkpoint, Lane 21/22 (SN S51039001): The wing on the master unit, exit side was mounted backwards.

(3) Employee Checkpoint, Lane 37/38 (SN S51038011): The wing on the slave unit, exit side was loose and missing several screws.