# Radiation Survey for eXaminer



| General Information | |
|---|---|
| **Date Survey Performed:** | 12/19/2009 |
| **Tunnel Numbers: Entrance SN: 2333A / Exit SN: plate with S/N has been removed** | |

## General Notes

The worse case radiation scatter occurs while scanning bags. These instructions simulate this condition by using the IQTK bag while surveying explosive detection systems.

The Victoreen Ion Chamber Survey Meter's detection area is approximately 2 inches square and is located directly behind the display screen on the bottom of the unit. The meter must be placed within 5 cm. of the area or surface being measured.

## Equipment

Victoreen Ion Chamber Survey Meter - Model 450P or Inovision Ion Chamber Survey Meter - Model 451P

## Materials

N/A

## References

1. 21 CFR 1020.4 Cabinet x-ray systems
2. Victoreen Operation and Instruction Manual – Rev 2

## Instruction

**Unit Number 6295**

1. In an area away from the scanners, turn on the meter by pressing the on-off key. Wait approximately 4 minutes for the meter to run through the initialization procedure. After the initialization procedure is complete and the meter is reading less than 20 μ R/h the meter is ready for use.
2. Change the manual tunnel control on the scanner and exit tunnel to stop. Place the IQTK bag on the exit tunnel in the B orientation and push it into the scanner approximately 19.5 inches from the edge of the exit tunnel. Use a tape measure to verify distance.
3. Start the system by pressing "7" <enter> at the main FCC screen.
4. After system is running, type 2 <enter> and verify on the FCC screen that the high voltage exceeds 160KV. Verify that the scanner x-ray indicator lights are lit.
5. Place the meter against the surface at the approximate center point of one of the boxes indicated on Figure 1. Move the meter around the entire box at a speed of approximately 2 in/sec. Record the highest reading observed at the appropriate location on Figure 1. Continue scanning until measurements are obtained for each box. **NOTE: Special care must be used when scanning seams where the tunnels and scanners connect as well as areas in front of and surrounding the lead curtains. These areas have been shaded in Fig. 1**
6. After radiation survey is complete, change the setting on the exit conveyor to forward and manually turn the scanner conveyor to forward to remove the IQTK bag.



L-3 Communications Security and Detection Systems - Proprietary

# Radiation Survey for eXaminer



**Scanner Radiation Survey**
(Enter radiation in µrem)

**Scanner Left Side**

**Unit Number**
**6295**

**Output** | **Input**

| | | | | | | |
|---|---|---|---|---|---|---|
| 26 **11** | 1T **19**<br>1 **9**<br>1S **24** | 2T **15**<br>2 **11**<br>2S **13** | 3 **8** | 4 **12** | 5 **7** | |
| 27 **14** | 6S **36**<br>6 **15** | 7S **23**<br>7 **12** | 8 **6** | 9 **8** | 10 **7** | |
| 28 **8**<br>29 **18**<br>30 **14** 31 **24** | 11S **23**<br>11 **14** | 12S **9**<br>12 **11** | 13 **7** | 14 **9** | 15 **12** | |
| 32 **16** | 16S **19**<br>16 **11** | 17S **7**<br>17 **7** | 18 **6** | 19 **30** | 20 **10** | |
| 33 **16** | 21S **13**<br>21 **10**<br>21B **12** | 22S **14**<br>22 **11**<br>22B **13** | 23 **7** | 24 **16** | 25 **30** | |

**Legend**

T – Top of A/C
S – Side of A/C
B – Bottom of A/C

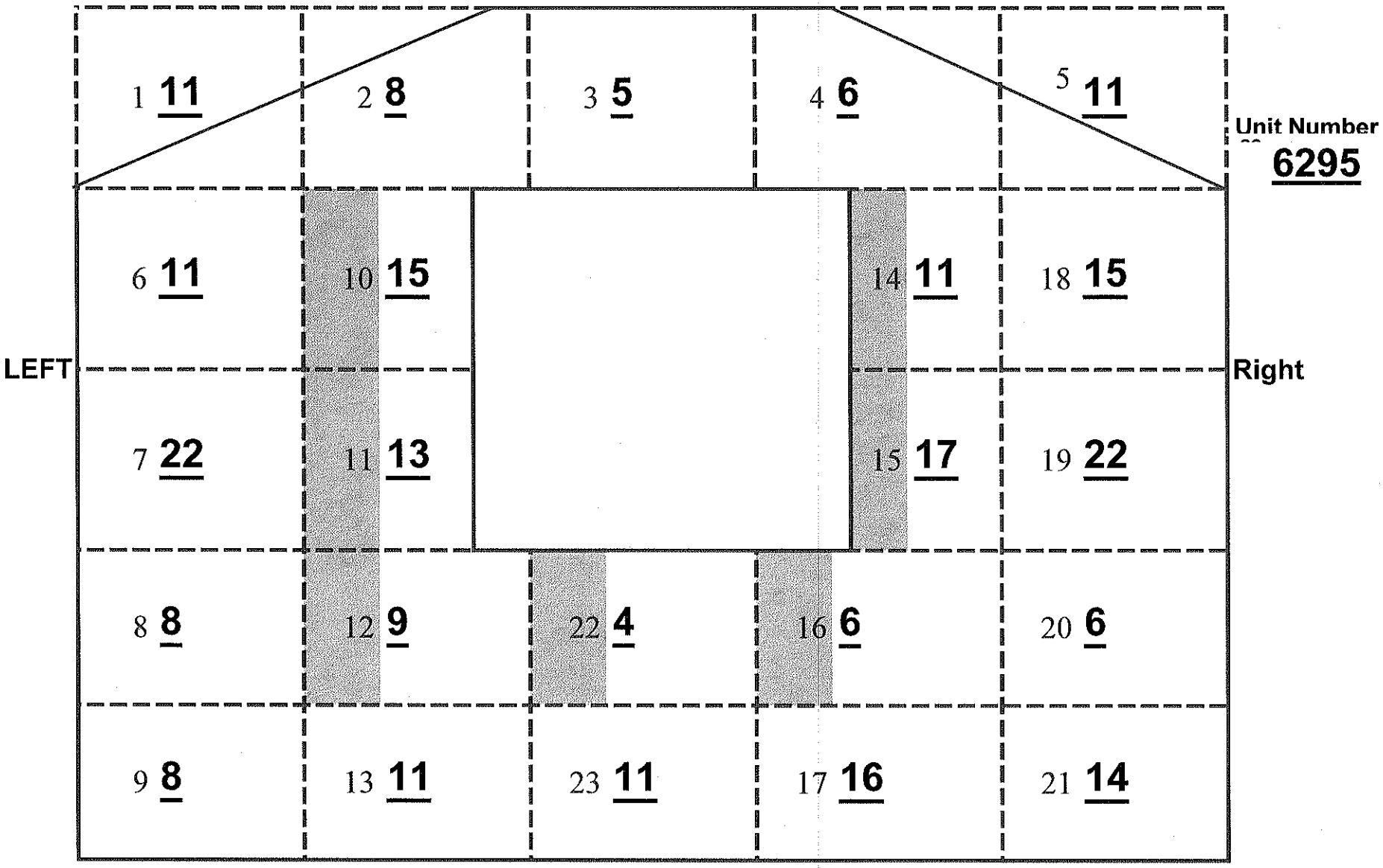
Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**

L3-FC-6115
12/15/04

# Radiation Survey for eXaminer



SCANNER ENTRANCE




Checked by: [redacted] Meter Number: 451P-YGG Meter Serial #: 59 Calibration Due Date: 12/23/2010



L-3 Communications Security and Detection Systems - Proprietary

# Radiation Survey for eXaminer



SCANNER EXIT

Unit Number 6295

RIGHT

LEFT

| | | | | |
|---|---|---|---|---|
| 1 **11** | 2 **12** | 3 **9** | 4 **7** | 5 **8** |
| 6 **11** | 10 **14** | | 14 **9** | 18 **18** |
| 7 **34** | 11 **8** | | 15 **7** | 19 **8** |
| 8 **9** | 12 **7** | 22 **6** | 16 **11** | 20 **10** |
| 9 **8** | 13 **11** | 23 **9** | 17 **8** | 21 **10** |

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**

# Radiation Survey for eXaminer



**Scanner Right Side**

**Unit Number** **6295**

**Input** **Output**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 **8** | 2 **6** | 3 **8** | 4 **7** | 5 **14** | 26 **11** | |
| 6 **3** | 7 **8** | 8 **10** | 9 **8** | 10 **10** | 27 **7** | |
| 11 **7** | 12 **4** | 13 **7** | 14 **12** | 15 **13** | 28 **11** | |
| | | | | | 29 **13** 30 **9** | 31 |
| 16 **2** | 17 **17** | 18 **8** | 19 **7** | 20 **4** | 32 **12** | |
| 21 **4** | 22 **7** | 23 **8** | 24 **5** | 25 **8** | 33 **10** | |

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**

# Radiation Survey for eXaminer



SCANNER ROOF

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 **4** | 2 **8** | 3 **4** | 4 **3** | 5 **4** | | | |
| 6 **9** | 7 **4** | 8 **6** | 9 **8** | 10 **4** | | 26 **9** | |
| 11 **10** | 12 **6** | 13 **6** | 14 **6** | 15 **2** | | 27 **6** | |
| 16 **8** | 17 **4** | 18 **5** | 19 **14** | 20 **3** | | 28 **7** | |
| 21 **3** | 22 **7** | 23 **11** | 24 **9** | 25 **8** | | | |

INPUT

OUTPUT

Unit Number
**6295**

Checked by: [redacted]

Meter Number: **451P-YGG**

Meter Serial #: **59**

Calibration Due Date: **12/23/2010**



L-3 Communications Security and Detection Systems - Proprietary

## Tunnel Radiation Survey
(Enter radiation in µrem)

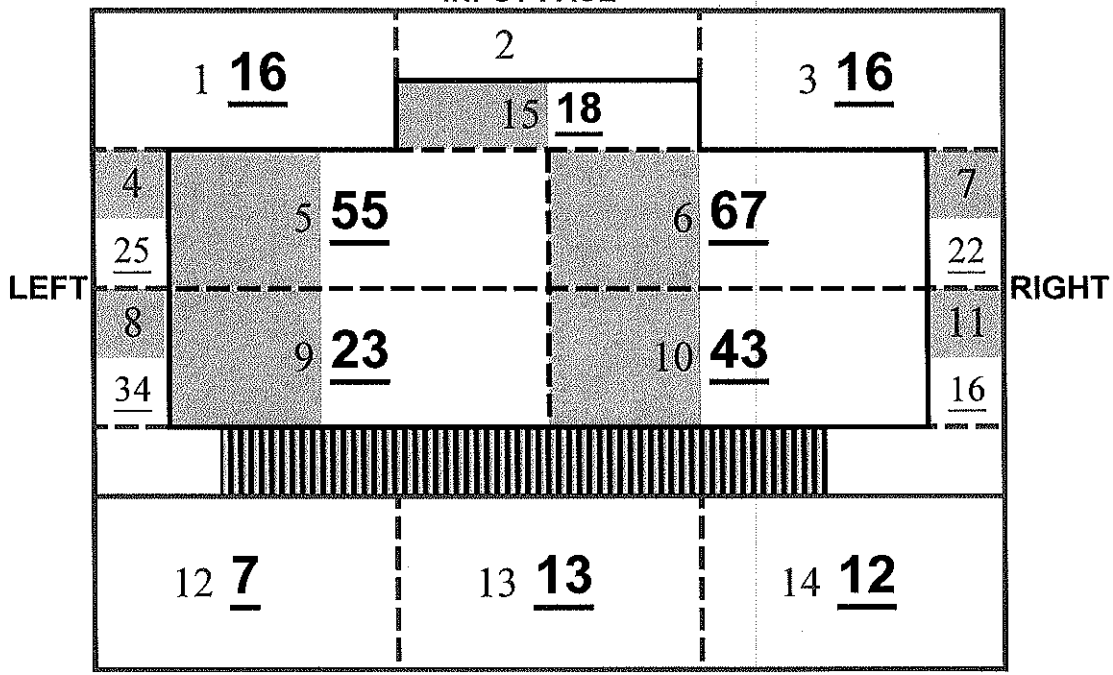
INPUT TUNNEL ROOF

SCANNER

| | | | | |
|---|---|---|---|---|
| 1 **8** | 2 **5** | 3 **18** | 4 **10** | 5 **7** |
| 6 **11** | 7 **8** | 8 **11** | 9 **6** | 10 **8** |
| 11 **9** | 12 **6** | 13 **4** | 14 **8** | 15 **20** |

INPUT

INPUT FACE




Unit Number
**6295**

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**

# Radiation Survey for eXaminer



INPUT TUNNEL

Unit Number
6295

SCANNER

| | | | | |
|---|---|---|---|---|
| 1 **14** | 2 **19** | 3 **22** | 4 **10** | 5 **8** |
| 6 **19** | 7 **18** | 8 **8** | 9 **8** | 10 **14** |
| 11 **33** | 12 **30** | 13 **16** | 14 **14** | 15 **10`** |
| 16 **12** | 17 **5** | 18 **9** | 19 **10** | 20 **6** |
| 21 **9** | 22 **9** | 23 **5** | 24 **7** | 25 **9** |

INPUT

LEFT SIDE

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**



L-3 Communications Security and Detection Systems - Proprietary

# Radiation Survey for eXaminer



EXIT TUNNEL

Unit Number **6295**

OUTPUT

| | | | | |
|---|---|---|---|---|
| 1 **7** | 2 **9** | 3 **22** | 4 **24** | 5 **20** |
| 6 **27** | 7 **15** | 8 **15** | 9 **20** | 10 **12** |
| 11 **7** | 12 **25** | 13 **15** | 14 **12** | 15 **13** |
| 16 **7** | 17 **8** | 18 **8** | 19 **9** | 20 **11** |
| 21 **6** | 22 **3** | 23 **8** | 24 **22** | 25 **5** |

SCANNER

LEFT SIDE

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**



L-3 Communications Security and Detection Systems - Proprietary

# Radiation Survey for eXaminer



OUTPUT TUNNEL ROOF

| SCANNER | | | | | | OUTPUT |
|---|---|---|---|---|---|---|
| | 1 **8** | 2 **20** | 3 **28** | 4 **45** | 5 **14** | |
| | 6 **6** | 7 **28** | 8 **27** | 9 **44** | 10 **8** | |
| | 11 **26** | 12 **21** | 13 **20** | 14 **23** | 15 **10** | |

OUTPUT FACE

| RIGHT | | | | | | LEFT |
|---|---|---|---|---|---|---|
| | 1 **8** | 2 **9** | 3 **10** | | | |
| 4 / 45 | 5 **43** | | 6 **33** | | 7 / 53 | |
| 8 / 31 | 9 **66** | | 10 **46** | | 11 / 33 | |
| | 12 **6** | 13 **8** | 14 **4** | | | |

Unit Number
**6295**

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**



L-3 Communications Security and Detection Systems - Proprietary

# Radiation Survey for eXaminer



EXIT TUNNEL

Unit Number
6295

SCANNER

OUTPUT

| | | | | |
|---|---|---|---|---|
| 1 **33** | 2 **36** | 3 **17** | 4 **7** | 5 **10** |
| 6 **16** | 7 **28** | 8 **8** | 9 **2** | 10 **4** |
| 11 **17** | 12 **13** | 13 **8** | 14 **9** | 15 **6** |
| 16 **9** | 17 **7** | 18 **7** | 19 **9** | 20 **5** |
| 21 **6** | 22 **10** | 23 **6** | 24 **9** | 25 **12** |

RIGHT SIDE

Checked by: [redacted] Meter Number: **451P-YGG** Meter Serial #: **59** Calibration Due Date: **12/23/2010**



L-3 Communications Security and Detection Systems - Proprietary

# Radiation Survey for eXaminer



INPUT TUNNEL

INPUT

| | | | | |
|---|---|---|---|---|
| 1 **12** | 2 **18** | 3 **19** | 4 **25** | 5 **30** |
| 6 **32** | 7 **15** | 8 **23** | 9 **28** | 10 **34** |
| 11 **21** | 12 **50** | 13 **15** | 14 **21** | 15 **20** |
| 16 **16** | 17 **15** | 18 **14** | 19 **9** | 20 **17** |
| 21 **13** | 22 **10** | 23 **9** | 24 **10** | 25 **11** |

SCANNER

RIGHT SIDE

Unit Number
**6295**

Checked by: [redacted]

Meter Number: **451P-YGG**

Meter Serial #: **59**

Calibration Due Date: **12/23/2010**



L-3 Communications Security and Detection Systems - Proprietary