



**Radiographic Systems Inspection  
Division of Electronic Products**

Facility Name:	Survey Date:
Registration Number:	Registration Sticker Present:
X-ray Control Manufacturer:	Mfr. Date:
Model #:	Serial #:
Tube Housing Manufacturer:	Mfr. Date:
Model #:	Serial #:
BLD Manufacturer:	Mfr. Date:
Model #:	Serial #:

Location/Room #:	Max kV:	Max mA:	Variance: RHB
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UNIT TYPE:	Stationary	Mobile/Portable
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SOURCE TO IMAGE DISTANCE (SID)				
	Indicated SID	Focal Spot to Tabletop	Tabletop to UTIR	Measured SID
<b>TABLE</b>				
<b>VCH</b>				

CENTERS & COLLIMATION				
Actual vs. Indicated Field Size Used:	Along:	Across:	Centers Misalignment: _____ cm _____ %	
Actual vs. Indicated Field Size Meas:	Along:	Across:		
X-ray Field / Light Field Misalignment:	Along:	Across:	Perpendicularity:	

COLLIMATION TYPE	POSITIVE BEAM LIMITATION (PBL) MEASUREMENTS					
	Cassette Size		X-Ray Beam Size		SID	
	Along	Across	Along	Across		
PBL: Manual or Auto						
Variable, non-PBL	<b>TABLE</b>					
Cone, Diaphragm	<b>VCH</b>					

RADIOGRAPHIC ENTRANCE EXPOSURE MEASUREMENTS										
Projection & Thickness (cm)	Screen/ Film speed	Film Size	kVp	mA/ mAs	Time	Indicated SID	Measured Distance	Beam Size	ESE mR	ESE Limit mR



EQUIPMENT INSPECTION FINDINGS		Registration #:	Room #:
Violation	Recommendation	DESCRIPTION OF VIOLATION/RECOMMENDATION	
<b>Technique Factors &amp; Machine Performance:</b>			
		<b>RHB 4.3.5 - Filtration.</b> This unit does not have the required aluminum equivalent filtration.	
		<b>RHB 4.3.9.1 - Technique Factor Indication.</b> The technique factors to be used during an exposure were not indicated before the exposure began.	
		<b>RHB 4.7.4.1 - Termination of Exposure.</b> The preset timer did not terminate the exposure. (Vet-RHB 4.12.11.1)	
		<b>RHB 4.7.4.2.6 - Timer Reproducibility.</b> The timer is not reproducing accurately. (Vet-RHB 4.12.11.2.3)	
		<b>RHB 4.7.5 - Exposure Reproducibility.</b> With all technique factors held constant, this unit does not reproduce accurately. (Vet-RHB 4.12.12)	
		<b>RHB 4.7.6 - Timer Accuracy.</b> The actual time of exposure varies from the indicated exposure time by more than ten (10) percent. (Vet-RHB 4.12.14)	
		<b>RHB 4.7.6 - kV Accuracy.</b> The actual kVp differs from the indicated kVp by more than ten (10) percent. (Vet-RHB 4.12.14)	
		<b>RHB 4.7.7 - mA/mAs Linearity.</b> This unit is not linear between mA/mAs stations. (Vet-RHB 4.12.15)	
		<b>RHB 4.7.8 - Illuminance.</b> The illuminance of the collimator light is less than the required 15 footcandles. (Vet-RHB 4.12.16)	
		<b>RHB 4.7.11 - Actual vs. Indicated SID.</b> The actual SID (Source to Image Distance) varies from the indicated SID of _____ by more than two (2) percent. (Vet-RHB 4.12.17)	
		<b>RHB 4.7.11 - SID Indication.</b> The SID (Source to Image Distance) must be numerically indicated in either inches or centimeters. (Vet-RHB 4.12.17)	
<b>Collimation:</b>			
		<b>RHB 4.7.1.3 - X-ray Field/Light Field Alignment.</b> The x-ray field and light field are misaligned _____ the table. (Vet-RHB 4.12.7)	
		<b>RHB 4.7.1.7 - Centers.</b> The center of the x-ray beam with respect to the center of the film is misaligned by more than two (2) percent.	
		<b>RHB 4.7.1.5 - Actual vs. Indicated Field Sizes.</b> When a _____ field size was dialed in on the collimator, the resulting x-ray beam was found to differ from the indicated field size by more than two (2) percent _____ of the table. (Vet-RHB 4.12.9)	
		<b>RHB 4.7.3.2 - Means to Center.</b> There are no means provided to align the center of the x-ray beam with the center of the image receptor. (Vet - RHB 4.12.10.1)	
		<b>RHB 4.7.13 - Operator Collimation.</b> When the operator set up for a _____, exam, the x-ray beam was found to be greater than the film size. The x-ray beam must be collimated to the area of clinical interest, and cannot exceed the film size by more than 2%. This is the operator's error, and is not due to a problem with the x-ray equipment.	
		<b>RHB 4.7.12 - Positive Beam Limitation (PBL).</b> The PBL is not sizing properly _____ the table. Neither the length nor width of the x-ray field shall differ from the corresponding image receptor dimension by more than 3% of the SID, and the sum of the length and width difference shall not exceed 4%.	
<b>Labels and Indicators:</b>			
		<b>RHB 4.3.10 - Focal Spot Indication.</b> The focal spot is not indicated on the tube housing.	
		<b>RHB 4.7.1.2 - Indication of Perpendicularity.</b> There is no means to indicate when the axis of the x-ray beam is perpendicular to the plane of the image receptor.	
		<b>RHB 4.7.1.3 - Visual Definition of Light Field.</b> There is no means provided for visually defining the edge of the x-ray field. (Vet-RHB 4.12.7)	
<b>Inspector(s):</b>		<b>Date:</b>	



**CIRCLE ITEMS NOT IN COMPLIANCE:**

**1. TIMER AND EXPOSURE**

- a. Preset timer terminates exposure - RHB 4.7.4.1 (4.12.11.1-vet)
- b. Timer accurate - RHB 4.7.6 (4.12.14-vet)
- c. Timer reproducible - RHB 4.7.4.2.6 (4.12.11.2.3-vet)

**2. FILTRATION AND TUBE HOUSING**

- a. Filtration adequate - RHB 4.3.5
- b. Tube head stable - RHB 4.3.8

**3. TECHNIQUE FACTORS/MACHINE PERFORMANCE**

- a. Technique factors indicated - RHB 4.3.9.1
- b. Kilovolt indicator accurate - RHB 4.7.6 (4.12.14-vet)
- c. mA stations linear - RHB 4.7.7 (4.12.15-vet)
- d. Exposures reproducible - RHB 4.7.5 (4.12.12-vet)
- e. Collimator light illuminance adequate-RHB 4.7.8 (4.12.16-vet)

**4. SAFETY FACTORS**

- a. Patient viewing adequate - RHB 4.7.4.2.4
- b. Visual indication of exposure - RHB 4.3.9.3 (4.12.11.2.2-vet)
- c. Audible indication of exposure - RHB 4.7.7.2.3 (4.12.11.2.2- vet)
- d. Technique chart present - RHB 4.2.6
- e. Technique chart adequate - RHB 4.2.6
- f. Entrance exposure within specified limits - RHB 4.2.13.2

**ESE Calculation**

$$ESE = \frac{(\text{Focal Spot To Probe})^2 \times (mR)}{(\text{FS to Table Top} - \text{Patient Thickness})^2}$$

$$ESE = \left( \frac{\text{cm}}{\text{cm} - \text{cm}} \right)^2 \left( \frac{\text{mR}}{\text{cm}} \right)$$

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**5. SHIELDING**

- a. Operator protection adequate - RHB 4.4.4.5
- b. Exposure switch mounted behind barrier - RHB 4.7.4.2.2
- c. Shielding accepted - RHB 4.4
- d. As-built drawings submitted - RHB 4.4.7
- e. Installation as shown on shielding plan - RHB 2.5.3
- f. Radiation area survey performed – RHB 4.4.6

**6. COLLIMATION**

- a. X-ray field/Light field alignment adequate - RHB 4.7.1.3 (4.12.7-vet)
- b. Means to center x-ray film and image receptor - RHB 4.7.3.2 (4.12.10.1- vet)
- c. Beam centering - RHB 4.7.1.7 (4.12.10.1 – vet)
- d. Actual vs. Indicated collimator field sizes accurate - RHB 4.7.1.5 (4.12.9-vet)
- e. SID indicator accurate - RHB 4.7.11 (4.12.17-vet)
- f. Operator collimation adequate - RHB 4.7.13
- g. PBL collimation adequate - RHB 4.7.12
- h. PBL functioning properly - RHB 4.7.12
- i. Min. field size adequate –RHB 4.7.14 (4.12.10.3 - vet)

**7. LABELS AND INDICATORS**

- a. Radiation area sign - RHB 3.15
- b. Warning label present - RHB 4.3.1
- c. Technique factors visible to operator - RHB 4.3.9
- d. Visual definition of light field - RHB 4.7.1.3 (4.12.7 vet)
- e. Indication of perpendicularity - RHB 4.7.1.2 (4.12.6-vet)
- f. Focal spot indication - RHB 4.3.10
- g. Multiple tubes labeled at control and tube - RHB 4.3.7

**Illuminance Calculation at 72":**

$$\frac{\text{Illuminance at Measured distance} \times (72)^2}{40^2}$$

**ESE Limits**

Projection	Thickness	200 Speed/Digital	400 Speed
PA Chest – Grid	23 cm	12 – 38	7 – 23
- Non Grid		7 – 23	2 – 8
AP Abdomen	23 cm	245 – 735	150 – 450
AP Lumbar Spine	23 cm	225 – 675	175 – 525
Full Spine (AP)	23 cm	130 – 390	72 – 218
AP Cervical Spine	13 cm	67 – 203	47 – 142
Lateral Skull	15 cm	72 – 218	35 – 105
DP Foot	8 cm	37 – 111	37 – 111
Cephalometric	15	15 – 45	15 – 45