PHYSICS CONSULTANTS, INC
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Fluoroscopic Compliance Inspection Report
Mobile C-arm

Wentworth Douglass Hospital
789 Central Avenue
Dover, NH 03820

Date of Inspection = 2/28/2018
Equipment Name = GE OEC
Model # 9600
PCID# 1019 (Seacoast Cancer Center)

I. GENERAL INSPECTION

PASS/FAIL

1. The radiation exposure switch shall require continuous pressure by the fluoroscopist for the entire time of any exposure. **PASS**

2. A cumulative timer that indicates the fluoroscopic "on-time" is working and produces an audible signal when an elapsed time of not more than 5 minutes occurs. **PASS**

3. The maximum fluoroscopic x-ray field is within the dimensions of the image intensifier. **PASS**

4. If manufactured after 6/10/06, the unit shall have the ability to display air kerma rate and cumulative air kerma. **Not Available - PASS (Manuf. 1998)**

5. If manufactured after 6/10/06, the unit shall be equipped with the means to display last image hold (LIH). **PASS**

II. X-RAY MACHINE TESTS

1. Half-value layer - The half-value layer (HVL), which is a measure of the energy of the radiation produced by the machine, was measured using an Unfors meter. The HVL should measure equal to or greater than the value specified.

Nominal kVp =	82		Measured kVp =	81.1
Measured half-value layer =	3.44	mm Al		
Minimum allowable HVL =	2.9	mm Al		**PASS**

2. Automatic Exposure Rate Control (ABC) - Increasing thickness of absorber should produce an increase in kVp, mA or both. An ion chamber was placed on the table-top as various thicknesses of absorber were placed in the radiation beam. The results below indicate whether the ABC is operating and also provide information about patient dose.

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	Continuous Normal Mode			Pulsed Normal Mode		
Patient thickness	Radiation R/min	Fluoro kVp	Fluoro mA	Radiation R/min	Fluoro kVp	Fluoro mA
15 cm	1.87	76	2.6	0.31	75	2.5
19 cm	2.94	84	3.3	0.47	82	3.1
23 cm	4.00	90	3.9	0.64	88	3.7
Max(lead)	8.75	120	5.0	1.57	120	5.0
lead(boost)	0.00	NA	NA	0.00	NA	NA

	Continuous Mag 2 Mode			Pulsed Mag 2 Mode		
Patient thickness	Radiation R/min	Fluoro kVp	Fluoro mA	Radiation R/min	Fluoro kVp	Fluoro mA
15 cm	2.76	74	4.0	0.48	74	4.1
19 cm	3.96	82	4.6	0.68	82	4.6
23 cm	4.93	91	4.8	0.85	90	4.8
Max(lead)	8.76	120	5.0	1.57	120	5.0
lead(boost)	0.00	NA	NA	0.00	NA	NA

The ABC tracks with patient thickness. **PASS**

The maximum radiation output is less than 10R/min at 30 cm from the image intensifier input phosphor. **PASS**

The boost mode creates an audible signal and is less than 20R/min at the intensifier input phosphor. **PASS**

3. Resolution - Spatial resolution was measured by imaging a wire-mesh test object placed near the image intensifier at low kVp and mA. The system should image the 24 line mesh at a minimum.

	Continuous Mode			Pulsed Mode		
II diameter	mesh center	mesh edge	kVp	mesh center	mesh edge	kVp
Normal	24	24	51	24	24	48
Mag 1	40	40	51	40	40	50
Mag 2	50	50	51	50	50	51

The system was able to image at least the 24 line mesh. **PASS**

4. Environmental Survey - Radiation measurements were obtained with an environmental monitor in areas where persons are likely to be exposed. A scattering phantom was placed in the beam. Estimated workload = 2 hours per week.

	85 kVp and 4.0 mAs	
Location	Exposure (mR/hr)	mR/wk
Operators position - no apron	140	280
Operators position with apron	0.5	1
At eye level	90	180
Beyond image intensifier	2	4
Side of patient	760	1520

Radiation levels are within acceptable limits. **PASS**

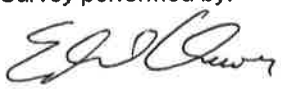
III. Comments

No comments.

IV. Recommendations

No recommendations

Survey performed by:



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