

# Equipment Specifications

## Digital Radiography and Fluoroscopy

VISN 19/Cheyenne Veterans Affairs Medical Center/442

442-B90026

### A. REQUIREMENT OVERVIEW

A digital fluoroscopy system is required for activation of the new Northern Colorado super-CBOC. This will be a part of the Cheyenne VAMC and will expand coverage and access to more Veterans across the state. It will need to integrate with AGFA PACS. The fluoroscopy system will be used for studies of areas like the esophagus, stomach, small intestine and colon. This will also be used to assist in swallowing studies, needle localization for therapeutic injections of joints, cystography, etc.

Facility	Quantity
Northern Colorado CBOC	1

### B. TECHNICAL REQUIREMENTS

#### 1. Unit physical specifications

a. Minimum wall detector size [in x in]	17x17
b. Minimum table detector size [in x in]	17x17
c. Minimum detector resolution [lp/mm]	3.4
d. Maximum pixel size [ $\mu$ m]	148
e. Maximum patient weight [lbs]	650
f. Minimum table tilt [deg]	+/- 90
g. Minimum generator power [kW]	80
h. Minimum generator phases	3
i. Radiographic kVp range [kVp]	40-150
j. Radiographic mA range [mA @ kVp]	10-1000
k. Fluoroscopy kVp range [kVp]	40-125
l. Minimum pulse rate [frames/sec]	1
m. Minimum acquisition bit depth	16
n. Minimum spatial resolution [lp/mm]	3.4
o. Minimum SID range [in]	45
p. Heat unit x-ray tubes [kHU]	600
q. Minimum heat dissipation rate [HU/min]	125,000
r. Minimum control room computer hard drive memory [TB]	1

#### 2. Additional specifications



<b>Generator</b>					
<input checked="" type="checkbox"/>	a. High-frequency generator with automatic dose rate control				
<input checked="" type="checkbox"/>	b. Continuous and pulsed fluoroscopy ma modes				
<b>Fluoroscopic Tube</b>					
<input checked="" type="checkbox"/>	c. Configuration <table border="1" style="margin-left: 20px;"> <tr> <td><input checked="" type="radio"/></td> <td>Overhead tube</td> </tr> <tr> <td><input type="radio"/></td> <td>Floor-mounted</td> </tr> </table>	<input checked="" type="radio"/>	Overhead tube	<input type="radio"/>	Floor-mounted
<input checked="" type="radio"/>	Overhead tube				
<input type="radio"/>	Floor-mounted				
<input checked="" type="checkbox"/>	d. Pulsed/grid fluoroscopic tube				
<input checked="" type="checkbox"/>	e. Selectable filtration				
<input checked="" type="checkbox"/>	f. Collimation – fully adjustable manual and automatic exposure control with visible light field display. Rotatable +/- 45 degrees				
<b>Fluoroscopic spot device/Imaging tower</b>					
<input checked="" type="checkbox"/>	g. Flat panel detector technology				
<input checked="" type="checkbox"/>	h. Automated image capture and save, to include last image hold				
<input checked="" type="checkbox"/>	i. Variable speed power assist controlled in all directions				
<input checked="" type="checkbox"/>	j. Footswitch and tower controls, to provide the following: <table border="1" style="margin-left: 20px;"> <tr> <td>k. Control of both fluoroscopy and spot shots</td> </tr> <tr> <td>l. Automatic shut-off when footswitch or tower control is released</td> </tr> </table>	k. Control of both fluoroscopy and spot shots	l. Automatic shut-off when footswitch or tower control is released		
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l. Automatic shut-off when footswitch or tower control is released					
<input checked="" type="checkbox"/>	m. Removable lead curtains with counter weights for when curtains are not in use				
<input checked="" type="checkbox"/>	n. Ergonomic, ambidextrous controls				
<input checked="" type="checkbox"/>	o. Tabletop travel controls				
<input checked="" type="checkbox"/>	p. Collimation control				
<b>Radiographic/overhead tube crane system</b>					
<input checked="" type="checkbox"/>	q. Patient alignment system (laser alignment/positioning lights)				
<input checked="" type="checkbox"/>	r. Table and upright auto tracking package				
<input checked="" type="checkbox"/>	s. Pre-programmed exposure settings located on tube or in control room				
<input checked="" type="checkbox"/>	t. Ability to change between table top, upright bucky, and table bucky from tube head				
<input checked="" type="checkbox"/>	u. Ability to lower tube to within 16" of the floor when used with the wall stand				
<input checked="" type="checkbox"/>	v. Automatic tube crane, protocol-based movement				
<input checked="" type="checkbox"/>	w. In room protocol adjustment via tube head or other in-room mounted system				
<b>Control room fluoroscopic/radiographic control panel</b>					
<input checked="" type="checkbox"/>	x. Auto HIS/RIS refresh package				
<input checked="" type="checkbox"/>	y. Quality control tracking package				
<input checked="" type="checkbox"/>	z. UPS for x-ray control/image memory				
<input checked="" type="checkbox"/>	aa. Ability to send images directly from the control panel (no separate workstation required)				
<input checked="" type="checkbox"/>	bb. Ability to capture live video				
<b>Wall stand/fixed wall detector</b>					
<input checked="" type="checkbox"/>	cc. Ability to lower center of imaging plate to within 16" of the floor				
<input checked="" type="checkbox"/>	dd. Ability to tilt the imaging surface at least 90°				
<input checked="" type="checkbox"/>	ee. Automated movement for long axis stitching				



<input checked="" type="checkbox"/>	ff. Auto tracking of the tube and detector during vertical adjustment at the wall stand and/or tube.
<input checked="" type="checkbox"/>	gg. Tilt-able detector holder with inherent grid (-20 degrees to 90 degrees)
<input checked="" type="checkbox"/>	hh. Height minimum – low enough to complete standing knee exams while patient is standing on the floor
<input checked="" type="checkbox"/>	ii. Height maximum – high enough to complete AP C-spine exams while patient is standing on the floor
<b>In-room monitor</b>	
<input checked="" type="checkbox"/>	jj. LCD in-room monitor <input type="radio"/> Ceiling-mounted <input checked="" type="radio"/> Pedestal-mounted
<input checked="" type="checkbox"/>	kk. In-room remote control to orientate and manipulate images
<input checked="" type="checkbox"/>	ll. High contrast black and white
<input checked="" type="checkbox"/>	mm. Anti-glare display
<b>Removable table detector requirements</b>	
<input checked="" type="checkbox"/>	nn. Wireless detector (not tethered to the system/table)
<input checked="" type="checkbox"/>	oo. Detector charger in bucky/holder
<input checked="" type="checkbox"/>	pp. Additional battery
<input checked="" type="checkbox"/>	qq. Charging station (if required)
<b>Table requirements</b>	
<input checked="" type="checkbox"/>	rr. Ability to tilt 90 degrees in both directions/full tilt
<input checked="" type="checkbox"/>	ss. Full articulation
<input checked="" type="checkbox"/>	tt. Auto-centering option to exact middle while the table is in horizontal or vertical position
<input checked="" type="checkbox"/>	uu. Table movement controls <input checked="" type="radio"/> Tableside <input type="radio"/> Trolley
<input checked="" type="checkbox"/>	vv. Removable/adjustable patient handgrips
<input checked="" type="checkbox"/>	ww. Removable/adjustable footrest
<input checked="" type="checkbox"/>	xx. Removable/adjustable shoulder rests
<input checked="" type="checkbox"/>	yy. Removable/adjustable stirrups
<input checked="" type="checkbox"/>	zz. Bariatric table
<input checked="" type="checkbox"/>	aaa. Motor driven table top movement in the X and Y axis at stated maximum weight capacity.
<input checked="" type="checkbox"/>	bbb. Ability to lower tabletop height to at least 18" from the floor in the horizontal position at stated maximum weight capacity.

3. Software Requirements

<input checked="" type="checkbox"/>	a. Monitoring of Dosage- The system must be able to supply a technology that allows for monitoring and tracking of radiation dose provided to a patient. DAP accuracy must be 99% reproducible with <2% deviation.
<input checked="" type="checkbox"/>	b. Bone suppression
<input checked="" type="checkbox"/>	c. Repeat rate – ability to track repeat/retake data to include such items as technologist (required unique identifier), reason for



	repeat, patient dose, exam type, etc. The data should be exportable to Excel or other databases for tracking, trending, and combining with data from other imaging sources within the facility.
<input checked="" type="checkbox"/>	d. Rapid image display, < 5 seconds preferred.
<input checked="" type="checkbox"/>	e. Stitching – ability to stitch multiple long axis images with options for automated and manual process.
<input checked="" type="checkbox"/>	f. Ability to apply multiple image processing algorithms both pre and post-acquisition to allow for soft tissue and/or bone enhancement.
<input checked="" type="checkbox"/>	g. Dose Reduction- The system must have systems in place to facilitate regular protocol optimization and reduced radiation dose to the patient.
<input checked="" type="checkbox"/>	h. Fluoroscopy Loop – Ability to record and store dynamic fluoroscopy sequences. Storage capacity may be variable according to pulse per second settings (please specify). Please include storage and display options for recorded data review and archive.

4. Security/Connectivity Requirements

<input checked="" type="checkbox"/>	a. OEM-supported operating system
<input checked="" type="checkbox"/>	b. Latest DICOM print, store, commit, radiation dose structured report (RDSR), and modality worklist
<input checked="" type="checkbox"/>	c. Encrypted hard drive
<input checked="" type="checkbox"/>	d. PACS compatibility – [AGFA]

5. Added Value

Specifications listed below are not required, but preferred. Vendors who do not include the below specifications in the submitted offer will not be docked or excluded from consideration. Specifications listed below will be evaluated based on added value.

<input checked="" type="checkbox"/>	a. Embedded OS must be Windows 10 or later
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**C. TRAINING REQUIREMENTS**

1. Clinical Training

<input checked="" type="checkbox"/>	a. On-site clinical applications training for 4 technologists during go-live
<input checked="" type="checkbox"/>	b. Off-site clinical applications training for 3 technologists (to include tuition)
<input checked="" type="checkbox"/>	c. On-site follow-up clinical applications training for 4 technologists once technologists have hands-on experience with the system



<input checked="" type="checkbox"/>	d. Technologists who complete the clinical applications training shall receive continuing education credits (CMEs).
<input checked="" type="checkbox"/>	e. Vendors shall be responsible for accommodating different personnel shifts for clinical applications training during go-live.

2. Biomedical Technician Training

**Please reference the “Instructions to Offers” section 2.8.g for further information about the type of information to provide by equipment type not by specific request. Please also reference the “Instructions to Offers” section 7.3.3. for response format.**

Technical training information to include detailed information about the curriculum and length of the biomedical technical training required for each equipment type.

Although the NAC will not award this training along with the equipment, it is imperative that the customer is informed that this training is available. Vendors must demonstrate that they can provide any required off-site training, therefore off-site training should be quoted as an optional item. Off-site training will be purchased at the time of need via a modification (if the original order remains open) or via a separate order. No travel expenses for any VA employees will be included in any HTME equipment or training order.

## D. SERVICE REQUIREMENTS

1. VPN/Remote Access – The vendor shall provide any and all equipment service programs, such as remote diagnostics, during the warranty period. The vendor shall provide post-warranty remote diagnostic service program as an “Add Option” with the offer. The system shall provide vendor remote diagnostics via VPN. The vendor shall either utilize the VA national site-to-site VPN or work with the Office of Cyber and Information Security and the VAMC Information Systems Security Officer to establish a client-based VPN.
2. Service and Operator Manuals – The vendor shall provide the following documentation for the proposed systems:
  - a. Two (2) copies of operator instruction manuals (one (1) electronic and one (1) physical copy)
  - b. Two (2) copies of a service manuals (one (1) electronic and one (1) physical copy)

\*Vendors can include the physical copy as a priced line item in their quote as applicable.
3. Minimum Warranty – The system and accessories shall be covered under the manufacturer’s warranty and shall include all parts and labor for one year following acceptance by the VAMC. This warranty must include PMs as required by the manufacturer. The manufacturer’s factory-trained field service representatives shall perform installation and maintenance during the warranty period.

Vendors are encouraged to include any offerings for service, warranty, and training that may exceed the minimum requirements, to include information on their service support structure during and after the warranty period. Vendors who do not include any added value offerings for service, warranty, and training will not be docked or excluded from consideration. However, any such offerings will be evaluated based on added value.

## E. OTHER INFORMATION/DOCUMENTATION REQUESTED

**Please reference the “Instructions to Offers” section 2.8a-h for further information about the type of information to provide by equipment type not by specific request. Please also reference the “Instructions to Offers” section 7.3.3. for response format.**



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1. Completed pre-procurement assessment form (6550 Appendix A)
  2. Completed Manufacture Disclosure Statement for Medical Device Security (MDS2) form
  3. Federal Information Processing Standard (FIPS) 140-2 certification
  4. Product brochures
  5. Technical specification sheets, to include dimensions and weight of the system
  6. Typical drawings (pdf version of the CAD drawings)
  7. Technical training- Biomedical: information to include detailed information about the curriculum and length of the biomedical technical training required for each equipment type.
    - Although the NAC will not award this training along with the equipment, it is imperative that the customer is informed that this training is available. Vendors must demonstrate that they can provide any required off-site training, therefore off-site training should be quoted as an optional item. Off-site training will be purchased at the time of need via a modification (if the original order remains open) or via a separate order. No travel expenses for any VA employees will be included in any HTME equipment or training order.
  8. Support information to include your company's support structure during and after the warranty period
    - On-line or telephonic applications support and availability (include third party coverage)
    - A listing of field service engineer locations and availability
    - A listing of part depots

## F. TRADE-IN

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|-------------------------------------|---------------------------------------|
| <input checked="" type="checkbox"/> | a. VA has no trade-in units to offer. |
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