

Functional Requirements for  
**Digital Radiography System**

VISN 23 Station – St. Cloud, MN (656) - 618-B69029 – **revised 9/22/2016**

*This document highlights the technical specifications and services being requested by VISN 23 for consideration toward purchase of Digital Radiography Systems. This equipment will be used to for general diagnostic imaging. Offerors under this proposal shall provide all equipment and accessories, installation services, training, and project management support.*

**Technical Requirements:**

**Generator Requirements:**

1. Minimum 80 kW, 3 phase generator
2. Radiographic kVp range is 50-150
3. Maximum radiographic mA exposure 800 ma@ 100KVp
4. UPS – to bring the system down safely, not a full UPS

**Radiographic/Overhead tube Crane System**

1. Patient alignment system (laser alignment/positioning lights)
2. Pre-programmed exposure settings located on tube or in control room
3. Ability to change between table top, upright bucky and table bucky from tube head
4. Provide small and large focal spot information
5. Control handle – to include information about locking feature
6. **System motorization to include:**
  7. **Provide tube features; automatic/manual or both – both is preferred**
  8. **Automatic collimation**
  11. **Auto positioning – this is not a requirement but if the system is capable of this please include this as an option**
9. Optional table and upright auto tracking package
10. Display on the tube crane must be customizable
  - a. Patient information display screen available for technologist reference/review – *this is not a requirement but if the system is capable of this please include this as an option*
  - b. Ceiling detent measurement readings – *this is not a requirement but if the system is capable of this please include this as an option*
12. Overhead tube crane system should go as low as possible – state minimum isocenter distance to the floor
13. Remote Control - *this is not a requirement but if the system is capable of this please include this as an option*

**Control room Radiographic control panel**

1. Minimum 19" control room LCD monitor – touchscreen is preferred
2. Auto HIS/RIS refresh package
3. Computer hard drive **250** GB or greater
4. DVD burner is preferred – used as a contingency for burning studies if ability to send to PACS is not working
5. Operating system is Windows 7 or newer or other (Linux, Unix, etc...)
6. UPS for x-ray control/image memory to bring the workstation down safely
7. Automatic parameter selection
8. Ability to send images directly from the control panel. Not requiring a separate workstation.
9. Integrated DICOM structured dose reporting

**Detectors:**

VISN 23's intent is to have one minimum 14x16 detector permanently in the wall bucky and one minimum 14x16 detector permanently in the table bucky. In addition, VISN 23 also requires one minimum 14x16 wireless detector that can move in between rooms as needed for table top or cross table laterals.

**Fixed Wall Digital Detector Requirements:**

1. Detector size minimum 14"x16"
  - a. *This could be quote as wireless detector but it will permanently reside in the wall bucky, therefore if quoted as a wireless detector we require that it charge in the wall bucky.*
2. Resolution – minimum 2.0 lp/mm
3. Tilting bucky including
  - a. Incremental tilting – e.g. 10, 15, 45, etc.
  - b. Lays out flat horizontally - i.e. 90 degrees
  - c. Stands up straight vertically – i.e. 180 degrees
4. Height minimum – low enough to complete standing knee exams while patient is standing on the floor
5. Height maximum – high enough to complete AP C-spine exams while patient is standing on the floor
6. Removable/adjustable patient handgrips
7. ~~Mobile patient stand to be used with auto stitching feature~~
8. Grids - (as required by vendor- e.g. attachments/software)

**Fixed Table Digital Detector Requirements:**

1. Detector size minimum 14"x16"
  - a. *This could be quote as wireless detector but it will permanently reside in the table bucky, therefore if quoted as a wireless detector we require that it charge in the table bucky.*
2. Resolution – minimum 2.0 lp/mm
3. Grids - (as required by vendor- e.g. attachments/software)

**Additional Wireless Digital Detector Requirements:**

1. Detector size – minimum 14"x16"
2. Resolution – minimum 2.0 lp/mm
3. Weight Limit (w/battery installed) – maximum 11 lbs.
4. Wireless (not tethered to the system/table)
5. Wireless – compatible with 802.11b/g/n or Ultra-Wideband
6. FIPS 140-2 compliant or an approved waiver
7. Describe maximum patient weight for weight bearing examinations.
8. Protective weight bearing cover
9. Provide full coverage warranty for a minimum of one year
10. Charging station (as required by vendor)
11. Grid attachments (as required by vendor)
12. Table holder - *this is not a requirement but please include that as an option*
13. Mobile holder - *this is not a requirement but please include that as an option*

**Software analysis/processing Requirements:**

1. Tomo – *this is not a requirement but if the system is capable of tomo please include that as an option*
2. Dual Energy/Bone suppression - *this is not a requirement but if the system is capable of this please include this as an option*
3. Quality control tracking package
  - a. Includes the ability send this information to another PC without the use of a "USB drive"
  - b. Includes the ability to track by technologist

- c. Minimum of repeat/reject reports and ability to report exposure index information

#### **Table Requirements:**

1. Static – 600 lbs patient weight limit (minimum)
2. Dynamic – 400 lbs patient weight limit (minimum)
3. Width of table – 80 cm (minimum)
4. Floating tabletop
  - a. Hands-free operation
5. Adjustable height
6. Auto centering option to exact middle of the image receptor(s) – (e.g. Autotracking / Autoalign)
7. Table movement controls located table side
8. Foot controls on each side of the table - *this is not a requirement but if the system is capable of this please include this as an option*
9. Removable/adjustable patient handgrips

#### **Warranty and Service:**

1. VPN/Remote Access – The vendor shall provide, at no additional charge, 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. Vendor shall utilize the VA national Site-to-Site VPN, or the vendor shall work with the Office of Cyber and Information Security and the VAMC Information Security Officer to establish a Client-Based VPN.
2. Service and Operator Manuals – The vendor shall provide the following documentation for the proposed system:
  - Two (2) copies of operator's instruction manuals (one electronic and one paper copy)
  - Two (2) copies of complete technical service manuals including detailed troubleshooting guides, necessary diagnostic software, service keys, schematic diagrams, and parts lists (one electronic and one paper copy)
  - Two (2) copies of a system manager’s (super users) manual outlining back-up procedures, managing privilege group limits, routine tasks, etc.
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 personnel shall perform installation and maintenance during the warranty period.

#### **Training**

1. On-site
  - a. Clinical applications **during go-live** - minimum of 4 days (32 hours total)
  - b. Training should be for both technologists and physicians
  - c. Same clinical applications trainer for each site, who must be cleared through VISN 23 workgroup
2. Follow-up
  - a. Applications training to be provided after technologists have hands-on experience with the system - between **1-2 months** following go-live for a minimum of 2 days (16 hours total)
  - b. Applications training to be provided after technologists have hands-on experience with the system – between **5-6 months** after go-live for a minimum of 2 days (16 hours total)
3. Quick notes – or reference guides to be provided during on-site training (*as available by vendor*)

#### **Information to be provided by each vendor:**

1. Provide information about the locking feature on the control handle of the Overhead Tube Crane System
2. Provide information about the quality control tracking package
3. Provide information on accessories need for stitching (include pictures and specs)
4. Provide minimum and maximum travel of wall bucky and tube
  - a. i.e. *The center of the fixed wall bucky detector travels within XX inches of the floor (minimum). The center of the fixed wall bucky detector travels up to a height of XX feet (maximum). The minimum and maximum travel of the tube head matches the travel of the fixed wall bucky.*
5. Provide minimum and maximum table height
  - a. i.e. *The top of the table travels within XX inches of the floor (minimum). The top of the table travels up to a height of XX feet (maximum).*
6. Provide information about the wireless detector:
  - a. charging options
  - b. battery life/charging requirements/run time
  - c. weight
    - with grid
    - without grid
    - with protective weight bearing cover
    - without protective weight bearing cover
  - d. maintenance requirements
  - e. cleaning instructions for the wireless detector
  - f. Warranty coverage (i.e. drop policy, battery replacement, are grids covered, etc.)
  - g. Post warranty coverage (i.e. drop policy, battery replacement, are grids covered, etc.)
7. Provide information about the steps required to activate the floating tabletop.
8. Provide detail information about the curriculum and length of the Biomedical Technical Training.
9. Provide details on any off-site training offered for technologists
10. Provide brochures and spec sheets
11. Typical drawings (to include minimum room size requirements)
12. DICOM conformance statement
13. Completed pre-procurement assessment form (6550)
14. Information about your companies support structure during the warranty period
  - a. Describe on-line or telephonic applications support and availability
  - b. Provide a listing of Field Service Engineer locations and availability

**Trade-in – None**