VA – St. Louis Health Care System
Performance Work Statement
Diagnostic Medical Physics Support or Services

The Contractor shall be a qualified medical physicist as discussed below. Additionally, the contractor shall furnish all labor, material, supplies, equipment, and qualified personnel as described below to provide on-site diagnostic medical physics support or services for the Veterans Health Administration (VHA), under the terms and conditions stated herein and must adhere to VHA Handbook 1105.04, Fluoroscopy Safety, dated July 6, 2012, http://vaww./va.gov/vhapublications/ViewPublications.asp?pub_ID=2764.

The Contractor shall comply with radiation protection standards in 29 CFR 1910.1096 and immediately report any unsafe conditions with the potential to adversely impact the facility radiation workers or patients to the Radiation Safety Officer (RSO).

I. General Requirements

A. Performance

All work shall be performed by a qualified diagnostic medical physicist. A qualified diagnostic medical physicist is a person who is certified by the American Board of Radiology, American Board of Medical Physics, or the Canadian College of Physicists in Medicine. For mammography, a qualified medical physicist can have state licensure to perform mammography inspections in lieu of board certification. For diagnostic computed tomography (CT), nuclear medicine, PET, or MRI, a qualified medical physicist can meet the following requirements in lieu of board certification:

(1) A graduate degree in physics, medical physics, biophysics, radiologic physics, medical health physics, or a closely related science or engineering discipline from an accredited college or university

(2) Formal graduate-level coursework in the biological sciences with at least one course in biology or radiation biology and one course in anatomy, physiology, or a similar topic related to the practice of medical physics

(3) Documented 3 years of clinical experience in CT, nuclear medicine, PET, or MRI. The physicist must document the 3 years of experience for the modality being inspected.

B. Mandatory Services to be performed:

(1) The qualified diagnostic medical physicist shall perform imaging equipment (x-ray equipment, nuclear medicine cameras, PET/CT cameras, ultrasound units, and MRIs) inspections to ensure compliance with the current American College of Radiology (ACR) and Mammography Quality Standards Act (MQSA) requirements. Any deficiencies or non-conformances discovered during the inspection shall be verbally communicated to the service supervisor or RSO prior to the qualified diagnostic medical physicist leaving the facility. Deficiencies or non-conformances which represent unsafe conditions with the potential to

adversely impact the facility radiation workers or patients shall be reported to the RSO immediately upon discovery. A written report of the results shall be provided to the service supervisor or RSO within 15 working days after completion of the inspection. All imaging equipment (except ultrasound which is semi-annually, nuclear medicine cameras, and PET which are quarterly) shall be inspected at least annually, not to exceed 14 months.

(2) The qualified diagnostic medical physicist shall perform acceptance testing of all new or relocated imaging equipment prior to first clinical use. The acceptance testing shall comply with ACR or MQSA requirements. Any deficiencies or non-conformances discovered during the inspection shall be verbally communicated to the service supervisor or RSO prior to the qualified diagnostic medical physicist leaving the facility. Deficiencies or non-conformances which represent unsafe conditions with the potential to adversely impact the facility radiation workers or patients shall be reported to the RSO immediately upon discovery. A written report of the results shall be provided to the service supervisor or RSO within 15 working days after completion of the inspection.

(3) The qualified diagnostic medical physicist shall perform a full inspection of imaging equipment after repairs or modifications that may affect the radiation output or image quality. The inspection shall be completed within 48 hours after the facility contacts the contractor. Any deficiencies or non-conformances discovered during the inspection shall be verbally communicated to the service supervisor or RSO prior to the qualified diagnostic medical physicist leaving the facility. Deficiencies or non-conformances which represent unsafe conditions with the potential to adversely impact the facility radiation workers or patients shall be reported to the RSO immediately upon discovery. A written report of the results shall be provided to the service supervisor or RSO within
5 working days after performing of the inspection.

(4) The qualified diagnostic medical physicist shall provide consultation for additional services as needed, i.e., safety training.

(5) The qualified diagnostic medical physicist shall review CT protocols at least annually.

(6) The qualified diagnostic medical physicist shall provide shielding design calculations for each new, replaced, or relocated x-ray imaging system. The calculations for each shall comply with the National Council for Radiation Protection and Measurements (NCRP) Report No. 147, and, for dental units, NCRP Report No. 145, and shall be documented in a written report which includes a diagram showing adjacent areas. The qualified diagnostic medical physicist shall perform a shielding survey to verify the structural shielding was installed per the shielding design report and complies with the design goals. A verbal approval maybe provided and a written report of the shielding survey shall be provided to the RSO within 15 workings days after the shielding survey has been completed.

(7) The qualified diagnostic medical physicist shall assist in the development of a comprehensive technical quality assurance (QA) program (e.g., technique charts, repeat/reject analysis monitoring, monitoring of exposure indices to radiographic image receptors, QA

program for display monitors, QA for CT, monitoring of dose metrics from fluoroscopy studies), which complies with ACR recommendations, for all modalities. The qualified diagnostic medical physicist shall review at least annually. A written report of the results shall be provided to the service supervisor or RSO within 15 working days after performing of the inspection.

(8) The qualified diagnostic medical physicist shall perform a follow-up inspection to verify compliance of any necessary corrective action performed to correct deficiencies found.

C. Equipment Inspections

The Contractor shall conduct equipment inspections or quality control surveys of the imaging equipment listed below. The Contractor shall ensure the imaging equipment's compliance with applicable Federal regulations and ACR recommendations, and shall include, but not be limited to, monitoring the following basic performance characteristics.

(1) Radiographic and Fluoroscopic Equipment

Physics inspections of radiographic and fluoroscopic equipment shall comply with the ACR Technical Standard for Diagnostic Medical Physics Performance Monitoring of Radiographic and Fluoroscopic Equipment. The performance of each radiographic and fluoroscopic unit must be evaluated at least annually. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Integrity of unit assembly.

(b) Collimation and radiation beam alignment.

(c) Fluoroscopic system spatial resolution.

(d) Automatic exposure control system performance.

(e) Fluoroscopic automatic brightness control performance (high-dose-rate, pulsed modes, field-of-view [FOV] variation).

(f) Image artifacts.

(g) Fluoroscopic phantom image quality.

(h) kVp accuracy and reproducibility.

(i) Linearity of exposure versus mA or mAs.

(j) Exposure reproducibility.

(k) Timer accuracy.

(l) Beam quality assessment (half-value layer).

(m) Fluoroscopic entrance exposure rate (or air kerma rate). Maximum output and output using a phantom representing a standard size patient for all clinically used settings. [The mode of operation [e.g., magnification mode, frame rate, and any other mode selected must be documented for each measurement.]

(n) Fluorographic (image recording) entrance exposure rate (or air kerma rate) for cine imaging, if performed and entrance exposure (or air kerma) for spot images (if performed). Maximum output and output using a phantom representing a standard size patient for all clinically used settings. [The mode of operation (e.g., magnification mode, frame rate, etc.) must be documented for each measurement.]

(o) Image receptor entrance exposure.

(p) Equipment radiation safety functions.

(q) Patient dose monitoring system calibration. This includes, for radiographic systems, the metric of dose to the image receptor (IEC Exposure Index or proprietary index) and, for fluoroscopy systems, the displays of cumulative air kerma and, if available, DAP.

(r) Display monitor performance.

(s) Digital image receptor performance.

(t) Grids used with portable x-ray units shall be imaged for uniformity.

(u) For radiographic units, measurement of entrance skin exposure (or air kerma) for a standard size patient for common radiographic projections and comparison to published diagnostic reference levels and achievable doses (e.g., ACR practice parameter).

(v) High and Low Contrast Resolution.

(w) Exposure Rates for Typical Exams.

(x) Maximum Exposure Rates.

(y) Patient dose display accuracy (where applicable).

(z) Automatic dose rate and automatic exposure control performance.

(aa) Annual review of fluoroscopy protocols (forthcoming The Joint Commission requirement).

Note: The information on entrance exposure rates (or air kerma rates) from fluoroscopy and from fluorography, in Items (m) and (n) above, for each fluoroscope, shall be in a format suitable for providing to the physicians who operate the fluoroscope.

(2) Computed Radiography (CR) and Digital Radiography (DR)

Physics inspections of CR and DR equipment shall comply with the American Association of Physicist in Medicine (AAPM) Report Number 93, Acceptance Testing and Quality Control of Photostimulable Storage Phosphor Imaging Systems. The performance of CR and DR must be evaluated at least annually. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Component and Imaging Plate Physical Inspection and Inventory.

(b) Imaging Plate Dark Noise and Uniformity.

(c) Exposure Indicator Calibration.

(d) Linearity and Auto-ranging Response.

(e) Laser Beam Function.

(f) Limiting Resolution and Resolution Uniformity.

(g) Noise and Low-Contrast Resolution.

(h) Spatial Accuracy.

(i) Erasure Thoroughness.

(j) Aliasing/Grid Response.

(k) IP Throughput.

(l) Positioning and Collimation Errors.

(3) CT Scanners

The physics inspection shall conform to the current edition of the ACR Computed Tomography Quality Control Manual. The performance of each CT scanner shall be evaluated at least annually. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Review of Clinical Protocols.

(b) Slice Position Accuracy (when prescribed from Scout Image) and Alignment Light Accuracy.

(c) Image Thickness – Axial Mode.

(d) Table Travel Accuracy.

(e) Radiation Beam Width.

(f) Low-Contrast resolution.

(g) Spatial Resolution.

(h) CT Number Accuracy.

(i) Artifact Evaluation.

(j) CT Number Uniformity.

(k) Dosimetry (the scanner displayed CTDI vol values must be within +/- 20% of the measured CTDI vol values).

(l) Acquisition Display Calibration.

(m) Image uniformity.

(n) High-Contrast Resolution.

(o) Geometric or Distance Accuracy.

(4) Dental

The physics inspection shall conform to the current information of the Conference of Radiation Control Program Directors (CRCPD), Quality Control Recommendations for Diagnostic Radiography Volume 1 Dental Facilities. The performance of dental x-ray inspections shall be annually or every 2 years. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Collimation and Minimum Source to Skin Distance.

(b) Beam quality (half value layer).

(c) Timer Accuracy and Reproducibility.

(d) kVp Accuracy and Reproducibility.

(e) mA or mAs Linearity.

(f) Exposure Reproducibility.

(g) Entrance Skin Exposure Evaluation, with comparison to published diagnostic reference levels and achievable doses (e.g., NCRP Report No. 172).

(h) Technique Chart Evaluation.

(i) Image uniformity (artifact evaluation).

(j) Tube head stability and positioning.

(k) Leakage radiation and Visual Inspection.

(l) Quality Control for Digital Intraoral Image Receptors.

(m) Evaluation of Site's Quality Control Program.

(n) Scattered Radiation Survey.

(5) Dental CBCT Acceptance, Performance, and Annual Physics Testing

(a) Acceptance Testing. Acceptance testing and measurements of air kerma at the isocenter for each kVp station for a range of clinically used mAs settings will performed initially when the CBCT unit is installed, and following any move of the CBCT to another area inside or outside the initial clinical site. This testing is to ensure that the equipment performance is in agreement with the manufacturer's technical specifications.

(b) Performance Testing. Each CBCT unit shall undergo periodic quality control tests to insure that the performance of the machine has not significantly deteriorated and is operating within the manufacturer's technical specifications. This performance testing is performed by a qualified expert annually, at intervals not to exceed 14 months, and after repairs to the CBCT unit that may affect the radiation output or image quality.

(c) Some manufacturers provide a phantom and procedures to perform machine specific quality assurance (QA) tests. In cases where the manufacturer provides a phantom and procedures to perform specific tests but the tests are not included in this SOW, then the manufacturer's machine-specific QA tests shall be performed in addition to the QA tests in this SOW.

(d) Radiation output Repeatability

Make four measurements of the air kerma at the isocenter at a clinically used setting. The measurements should be less than +/-5% of the average of the five measurements and the measurements should be less than +/- 5% of the previous year's measurement.

(e) Radiation Output Reproducibility

Measure the air kerma at the isocenter for each kVp station and a range of clinically used mAs setting. Compare the results to the baseline values established at the initial acceptance testing. The values should be +/-5% of the baseline.

(f) kVp Accuracy

Measure the kVp at all clinically used settings. The measured kVp should be +/-5% of the selected kVp.

(g) kVp Repeatability

Make five kVp measurements each for two clinically used kVp settings. All measured values should be +/-5% of the mean kVp.

(h) kVp Reproducibility

Measure the kVp at all available kVp settings. The measured values should be +/-5% of the baseline.

(i) Beam quality

Measure the half value layer (HVL) for aluminum. The minimum shall comply with Section F.4.d of the Suggested State Regulations for Control of Radiation, Conference of Radiation Control Program Directors.

(j) Radiation field of view (FOV)

Measure the width of the radiation field at the isocenter. The width of the beam should be 3 mm or 30% of the total nominal collimated width.

(k) Image Quality

Image the phantom provided by the manufacturer or another suitable phantom. Assess high contrast spatial resolution, uniformity of transaxial images, and image noise. Imaging uniformity shall be assessed over the entire range of axial images.

(l) Accuracy of Linear Measurements

Using images of an appropriate phantom, assess the accuracy of distance measurements.

(m) Accuracy of Patient Dose Metric Indication

Assess the accuracy of the indicated dose metric (typically DAP).

(n) Patient Dose Assessment

From a scan or scans using the facility's standard techniques, record the dose metric (typically DAP) and compare to achievable levels and diagnostic reference levels (if available)

(o) Review of the technical QA program

The qualified expert shall review the technical QA program. The review shall include a trend analysis of the QA data. The results of the technical QA program review shall be included in the written report. Any trends that identify problems shall be included in the report along with recommended corrective actions.

(p) Display Monitors

Perform a visual analysis of the SMPTE test pattern.

- Display the test pattern on the imaging console. Set the display window width/level to the manufacturer-specified values for the pattern. Do not set the window/level by eye; doing so invalidates the procedure.

- Examine the pattern to confirm that the gray level display in the imaging console is subjectively correct.

- Review the line pair patterns in the center and at each of the corners.

- Review the black-white transition.

- Look for any evidence of "scalloping" (loss of bit depth) or geometric distortion.

- Use a photometer to measure the maximum and minimum monitor brightness (0% and 100% steps)

- Measure additional steps within the pattern to establish a response curve.

- Measure the brightness near the center of the monitor and near all 4 corners (or all 4 sides, depending on the test pattern used).

(q) Viewing Conditions

Assess the viewing conditions for the area in which the monitor used for evaluation of the studies are located.

(6) Mammography

The qualified diagnostic medical physicist inspecting mammography equipment must meet the qualifications outlined in the Mammography Quality Standards Act (MQSA) and shall provide the facility with up-to-date documentation demonstrating the qualified diagnostic medical physicist is MQSA qualified. Inspections of mammography equipment must comply with the latest requirements posted on the ACR Web site for the manufacturer of the digital mammography unit being inspected. Inspection items may include:

(a) Mammographic Unit Assembly Evaluation.

(b) Collimation assessment.

(c) Artifact evaluation.

(d) kVp accuracy and reproducibility.

(e) Beam quality assessment – HVL measurements.

(f) Evaluation of system resolution.

(g) Automatic Exposure Control (AEC) function performance.

(h) Breast entrance exposure, AEC reproducibility, and average glandular dose.

(i) Radiation output rate.

(j) Phantom image quality evaluation.

(k) Signal–to–noise ratio and contrast–to noise ratio measurements.

(l) View box luminance and room illuminance.

(m) Review Work Station (RWS) tests.

(7) MRI

The physics inspection shall conform to the current edition of the ACR Magnetic Resonance Imaging Quality Control Manual. The performance of each MRI scanner shall be evaluated at least annually. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Magnetic field homogeneity.

(b) Geometric accuracy.

(c) Inter-slice RF interference.

(d) Slice position accuracy.

(e) High-contrast resolution.

(f) RF coil performance.

- Volume coils' signal-to-noise ratio.
- Volume coils' image uniformity.
- Volume coils' ghosting ratio.
- Phased array coils' signal-to-noise ratio.
- Surface coils' signal-to-noise ratio.

(g) Slice thickness accuracy.

(h) Low-contrast detectability.

(i) Soft copy displays.

(j) Technologist's QC program.

(k) Site phantom inventory.

(l) Site RF coil inventory.

(8) PET

The physics inspection shall conform to the ACR PET Phantom Instructions for Evaluation of PET Image, ACR Nuclear Medicine Accreditation Program PET Module. The performance of each PET scanner shall be evaluated at least quarterly. For PET/CT units the CT must be inspected at least annually per Item C above. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Intrinsic Uniformity.

(b) Intrinsic or Spatial resolution.

(c) SUV analysis.

(d) System Uniformity.

(e) Relative Sensitivity.

(f) Energy Resolution.

(g) Count Rate Parameters.

(h) Monitor Evaluation.

(i) Dose Calibrators (Geometry, if applicable, Accuracy).

(9) Nuclear Medicine

The physics inspection shall conform to the ACR annual performance tests for nuclear medicine cameras. The qualified diagnostic medical physics shall also perform the quarterly testing as outlined by the ACR. The performance of each nuclear medicine scanner shall be at least annually. This evaluation should include, but not be limited to, the following tests (as applicable).

(a) Intrinsic Uniformity.

(b) System Uniformity.

(c) Intrinsic or System Spatial Resolution.

(d) Relative Sensitivity.

(e) Energy Resolution.

(f) Count Rate Parameters.

(g) Formatter/Video Display.

(h) Overall System Performance for SPECT.

(i) System Interlocks.

(j) Dose Calibrators (Geometry, if applicable, Accuracy).

(k) Thyroid Uptake and Counting Systems.

(9) Ultrasound

The physics inspection shall conform to the ACR performance tests for ultrasound. On an ongoing basis (at least semiannually), the following tests should be done for each ultrasound unit. Testing should be done using two transducers commonly used with any unit employing more than one transducer. Data should be taken from testing of the transducers which are used for the most frequently occurring examination(s) at the site. It is recommended that these be of different scan formats such as one linear (or curvilinear array), and one sector (mechanical, phased, or vector).

(a) System Sensitivity/Penetration.

This test should be done with the following settings:

- maximum transmit power.
- proper receiver gain and TGC that allows echo texture to be visible in the deep region.
- transmit focus at the deepest depth.

The maximum depth of visualization is determined by comparing the gradually weakening echo texture to electronic noises near the bottom of the image.

(b) Image Uniformity.

Adjust the TGC controls and other sensitivity controls to obtain an image as uniform as possible.

- vertical or radially oriented streaks?
- dropouts?
- reduction of brightness near edges of the scan?
- brightness transitions between focal zones?

(c) Electrical and Mechanical Safety and Cleanliness.

- Are all cords and cables intact (no frays)?
- Are all transducers intact without cracks or delamination?
- Are the transducers cleaned after each use?
- Are the image monitors clean?

- Are the air filters clean?

- Are the wheel locks in working condition?

- Are the wheels fastened securely to the US unit and do the wheels rotate easily?

- Are all accessories (VCR, cameras, etc.) fastened securely to the US unit?

(d) Gray Scale Photography (if applicable) – Do one of the procedures listed below:

- For Scanners with a Discrete Bar Pattern: Count the number of distinct gray bar steps on the viewing monitor. Then count the number of steps visualized in the gray bar on the hard copy image.

- For Scanners with a Continuous Gray Bar Pattern: Use calipers to measure the length of the black-to-white transition of the gray wedge on the viewing monitor. If the relative length of the black-to-white transition on the hard copy image is less, document how much is missing.

- For Laser Imager (Hard Copy Device): Prior to filming any images, an SMPTE test pattern created by the Society of Motion Picture and Television Engineers (SMPTE), should be printed using the appropriate window width (WW) and window level (WL). If you are unfamiliar with this procedure, you should review Gray et al., "Test pattern for video display and hard-copy camera," Radiology 145:519-527 (1985), and then contact your local service engineer for assistance. When printed, the 95% density patch within the 100% square and the 5% density patch within the 0% square should be visible, and there should be no notable distortions or artifacts present. If these criteria are not met, contact your service engineer for laser camera calibration before proceeding with any filming.

(e) Hard Copy Output Quality Test (Digital) (if applicable)

This test, or a similar test specifically recommended by the hard copy equipment manufacturer.
Required Test Equipment

- Densitometer.

- SMPTE Test Pattern or another similar test pattern or phantom image having a wide range of gray scales.

The same test image should be used each time.

(10) Display Monitors

The annual performance evaluation conducted by the diagnostic medical physicist includes testing of image acquisition display monitors for maximum and minimum luminance, luminance uniformity, resolution, and spatial accuracy. The image acquisition display monitors for nuclear medicine, PET, CT, and MRI units shall be tested.

D. X-Ray Tube Changes and New Equipment Replacement

(1) Vendor will provide performance evaluations for X-Ray tube changes with-in (2) two days and New Equipment Replacement within (1) week of being contacted by the VA – St. Louis Health Care System radiation safety office or another authorized official. Evaluations will be completed in accordance to the system modalities procedures listed above.

(2) This will include:

(a) Two (2) CT Tube Changes or New Equipment Replacement per year.

(b) Five (5) General Diagnostic X-Ray Tube Changes or New Equipment Replacement per year.

E. Equipment to be Covered

----Insert current equipment listing from Biomed-----

F. All reports of surveyed equipment shall have the electronic inventory control number listed on each report along with information that is normal and customary for reports which comply with the ACR.

II. SPECIAL CONTRACT REQUIREMENTS

A. QUALITY ASSURANCE SURVEILLANCE PLAN (QASP)

The Government intends to utilize a Quality Assurance Surveillance Plan (QASP) to monitor the quality of the contractor's performance. The oversight provided for in the order and in the QASP will help to ensure that service levels reach and maintain the required levels throughout the contract term. Further, the QASP provides the COR with a proactive way to avoid unacceptable or deficient performance, and provides verifiable input for the required Past Performance Information Assessments. The QASP is a living document and may be updated by the Government as necessary.

B. HOURS OF OPERATION

(1) The services covered by this contract shall be furnished by the contractor as defined herein. The contractor shall not be required, except in case of emergency, to furnish such services on Federal Holidays or during off duty hours as described below. Work performed

outside of the hours listed below may be conducted, provided it is to the mutual benefit of the COR and contractor and no additional fees are assessed.

(2) Normal working hours are Monday through Friday, 8:00am – 4:30pm, excluding federal holidays which are as follows:

New Year's Day	Birthday of Martin Luther King, Jr.	
Washington's Birthday	Memorial Day	Independence Day
Labor Day	Columbus Day	Veterans Day
Thanksgiving Day	Christmas Day	

(3) Any other day specifically declared by the President of the United States to be a federal holiday. When one of the holidays falls on Sunday, the following Monday shall be observed as a Federal Holiday. When a holiday falls on a Saturday, the preceding Friday shall be observed as a Federal Holiday.

C. BACKGROUND INVESTIGATIONS

(1) A full background check is not required for this position; however, all contract employees must bring photo identification and advance notice from the requiring service to obtain a VA Badge in order to work on a VA Facility.

(2) Upon award, the CO shall provide the contractor with detailed instructions on fulfilling security requirements.

D. BILLING AND PAYMENT

(1) The contractor shall submit payment requests in electronic form via VA's Electronic Invoice Presentment and Payment System http://www.fsc.va.gov/fsc/einvoice.asp.

(2) Invoices shall be submitted quarterly in arrears. The following information must be included on all submitted invoices. Invoices submitted without the following information may be rejected for payment. Invoices shall include at a minimum:

Contract Number	Obligation/Purchase Order Number
Invoice Number	CLIN (contract line item number)
Date of Service	Electronic Inventory Number (EE) for each piece of equipment surveyed

E. CONTRACT ADMINISTRATION

(1) Notwithstanding the Contractor's responsibility for total management during the performance of this contract, the administration of the contract will require maximum coordination between the Government and the Contractor.

(2) The Contracting Officer is the only person authorized to approve changes or modify any of the requirements of this contract. The Contractor shall communicate with the Contracting Officer on all matters pertaining to contract administration. Only the Contracting Officer is authorized to make commitments or issue changes that shall affect price, quantity or quality of performance of this contract.

(3) The COR shall be responsible for the overall technical administration of this contract as outlined in the COR Delegation of Authority.

(4) In the event the contractor effects any such change at the direction of any person other than the contracting officer without authority, no adjustment shall be made in the contract price to cover an increase in costs incurred as a result thereof.

(5) Points of Contact:

(a) Contracting Specialist:

(b) Contracting Officer:

(c) COR:

F. KEY PERSONNEL

Key personnel will be identified in the offer and shall be considered key personnel essential for the successful completion of the work performed under the contract. The contractor agrees that such personnel shall not be removed, diverted or replaced from the work without prior written approval of the Contracting Officer. The contractor shall submit written notice of proposed personnel changes to the Contracting Officer for approval at least thirty (30) business days in advance.

EntryNumber	Manufacturer	Mfgr Equipment Name	Model	Service Pointer	Location
163004	GE HEALTHCARE USA	BONE DENSITOMETER GE IDXA	LUNAR IDXA	STL-SPINAL CORD INJURY SVC	1S33-52-JB
83709	SIEMENS MEDICAL SYS	TUBE DR X-RAY UNIT	Multix Select DR	STL-DIS-RADIOLOGY	1E27-01-JB
83777	EASTMAN KODAK/RADIOGRAPHY	PANORAMIC SYSTEM	8000	STL-PCS-PRIMARY CARE SVC	BE110-51-JB
136139	CARESTREAM HEALTH INC	X-RAY INTRAORAL 110V/188CM WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE SVC	BE110-51-JB
147170	HOLOGIC	BONE DENSITOMETRY SYSTEM	HORIZON A	STL-DIS-RADIOLOGY	B228B-01-JC
151184	SIEMENS MEDICAL SYS	C-ARM	ARTIS ZEE	STL-DIS-RADIOLOGY	A208-01-JC
161013	PHILIPS HEALTHCARE NORTH AMERI	FD20	ALLURA XPER FD20	STL-DIS-RADIOLOGY	A261-01-JC
100166	PHILIPS MEDICAL SYS	CARDIAC CATH LAB ALLURA XPER FD20	ALLURA XPER FD20	STL-SCS-SPECIALTY CARE SVC	D418-01-JC
127139	PHILIPS MEDICAL SYS/ULTRASOUND	CARDIAC CATH LAB ALLURA XPER FD10	ALLURA XPER FD10	STL-SCS-SPECIALTY CARE SVC	B524-01-JC
142853	PHILIPS MEDICAL SYS	CATH LAB, CEILING MOUNTED-XCELERA ARCHIVING SYS	Allura XPER FD10	STL-SCS-SPECIALTY CARE SVC	B516-01-JC
142854	PHILIPS MEDICAL SYS	CATH LAB, CEILING MOUNTED-XCELERA ARCHIVING SYS	Allura XPER FD10	STL-SCS-SPECIALTY CARE SVC	B510-01-JC
129474	SIEMENS MEDICAL SYSTEMS	RADIOGRAPHIC SYSTEM	AXIOM LUMINOS AGILE	STL-DIS-RADIOLOGY	A217-01-JC
124652	SIEMENS MEDICAL SYSTEMS	TABLE, UROLOGICAL, RADIOGRAPHIC	UROSKOP ACCESS	STL-SURG-SURGERY SVC	D448-01-JC
46042	OEC MEDICAL SYSTEMS	C-ARM DIGITAL MOBILE W/16 IMAGE MEMORY	OEC 6600	STL-SURG-SURGERY SVC	B133-01-JC
63704	OEC MEDICAL SYSTEMS	C-ARM MINIVIEW CLINICAL PLATOFRM W/18 IN.IMAGE MEM	OEC 6800	STL-SURG-SURGERY SVC	B126-01-JC
101169	OEC MEDICAL SYSTEMS	C-ARM DIGITAL MOBILE - VASCULAR MTS PLATFORM	OEC 9900 ELITE	STL-ZZAMBULATORY CARE (11F)	1E33-01-JB
126361	ORTHOSCAN,INC.	C-ARM, MINI ORTHOSCAN HD	ORTHOSCAN 1000 HD	STL-SURG-SURGERY SVC	B132-01-JC
126374	ORTHOSCAN,INC.	C-ARM, MINI ORTHOSCAN HD	ORTHOSCAN 1000 HD	STL-SURG-SURGERY SVC	D424-01-JC
128432	GE HEALTHCARE USA	C-ARM, VAS MTS 12 MD	OEC 9900 ELITE	STL-SURG-SURGERY SVC	1E33-01-JB
129896	GE HEALTHCARE USA	C-ARM VAS MTS 12IN STD-C	OEC 9900 ELITE	STL-SURG-SURGERY SVC	D424-01-JC
129897	GE HEALTHCARE USA	C-ARM VAS MTS 12IN STD-C	OEC 9900 ELITE	STL-SURG-SURGERY SVC	D424-01-JC
129898	GE HEALTHCARE USA	C-ARM VAS MTS 12IN STD-C	OEC 9900 ELITE	STL-SURG-SURGERY SVC	D424-01-JC
129899	GE HEALTHCARE USA	PMCARE 12IN STD-C OR	OEC 9900 ELITE	STL-SURG-SURGERY SVC	B503-01-JC
152634	HOLOGIC	C-ARM, MINI FLORO SCAN	FLUOROSCAN INSIGHT-FD	STL-SURG-SURGERY SVC	D424-01-JC
73623	PHILIPS MEDICAL SYS	DIGITAL DIAGNOSTIC TH SYSTEM	DIGITAL DIAGNOST	STL-DIS-RADIOLOGY	A219-01-JC
100567	PHILIPS MEDICAL SYS	DR ROOM - FULLY INTEGRATED DIGITAL BUCKY SYSTEM	BUCKY DIAGNOST DIGITAL	STL-DIS-RADIOLOGY	A220-01-JC
112513	PHILIPS MEDICAL SYS	DR ROOM CHEST	DIGITAL DIAGNOST	STL-DIS-RADIOLOGY	A203-01-JC
113592	PHILIPS MEDICAL SYS	DIRECT RADIOLOGY DIGITAL CAPTURE SYSTEM	DIGITAL DIAGNOST	STL-DIS-RADIOLOGY	A215-01-JC
150646	HOLOGIC	MAMMOGRAPHY SYSTEM W/TOMOSYNTHESIS	SELENIA DIMENSIONS	STL-DIS-RADIOLOGY	A232-01-JC
151179	HOLOGIC	SPECIMEN RADIOGRAPHY SYSTEM	TRIDENT	STL-DIS-RADIOLOGY	A232E-01-JC
152224	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A938C-01-JC
152225	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A939-01-JC
152226	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A938B-01-JC
152227	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A936B-01-JC
152228	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A935-01-JC
152229	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A934-01-JC
152230	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A932-01-JC
154751	CARESTREAM HEALTH INC	X-RAY DENTAL LONG WALL MOUNTED	CS 2200	STL-PCS-PRIMARY CARE	A936A-01-JC
103427	GENERAL ELECTRIC/MEDICAL SYS	GE DEFINIUM AMX 700 DIGITAL MOBILE XRAY SYSTEM	DEFINIUM AMX-700	STL-DIS-RADIOLOGY	1E29-01-JB
128714	GE HEALTHCARE USA	X-RAY MACHINE, PORTABLE	OPTIMA XR220AMX		A229-01-JC
128715	GE HEALTHCARE USA	X-RAY MACHINE, PORTABLE	OPTIMA XR220AMX	STL-DIS-RADIOLOGY	D146-01-JC
128716	GE HEALTHCARE USA	X-RAY MACHINE, PORTABLE	OPTIMA XR220AMX	STL-DIS-RADIOLOGY	A229-01-JC
128717	GE HEALTHCARE USA	X-RAY MACHINE, PORTABLE	OPTIMA XR220AMX	STL-DIS-RADIOLOGY	B906-01-JC
128718	GE HEALTHCARE USA	X-RAY MACHINE, PORTABLE	OPTIMA XR220AMX	STL-DIS-RADIOLOGY	A218C-01-JC
78651	VARIAN ASSOCIATES	LINEAR ACCELERATOR	CLINAC 6EX	STL-ZZDIAGNOSTIC RADIOLOGY-JC	A009A-01-JC
159458	ACCURAY INC	LINEAR ACCELERATOR	TOMOHDA	STL-ZZDIAGNOSTIC RADIOLOGY-JC	A008-01-JC
142914	SIEMENS MEDICAL SYS	CT SCAN,DEFINITION FLASH	SOMATOM DEFINITION FLASH	STL-DIS-RADIOLOGY	A258-01-JC

160965	SIEMENS HEALTHCARE	CT SCANNER,SIEMENS SOMATOM	SOMATOM DEFINITION EDGE	STL-DIS-RADIOLOGY	A259-01-JC
160966	SIEMENS HEALTHCARE	CT SCANNER, RADIATION THERAPY	SOMATOM DEFINITION AS	STL-ZZDIAGNOSTIC RADIOLOGY-JC	A007F-01-JC
154754	SIEMENS MEDICAL SYSTEMS	PET CT SCANNER	BIOGRAPH MCT FLOW	STL-DIS-NUCLEAR MEDICINE	A011D-01-JC
113322	SIEMENS MEDICAL SYS/NUCLEAR UL	SPECTCT T SERIES W/TABLE AND TUBE	SYMBIA T2	STL-DIS-NUCLEAR MEDICINE	A236-01-JC
161170	SIEMENS HEALTHCARE	SPECT CT SYMBIA INTEVO 16	SYMBIA INTEVO 16	STL-DIS-NUCLEAR MEDICINE	B233-01-JC
152222	CARESTREAM HEALTH INC	PANORAMIC X-RAY 3D	CS 9300	STL-PCS-PRIMARY CARE	A941-01-JC
160950	SIEMENS HEALTHCARE	SYMBIA S SPECT CAMERA SYSTEM	SYMBIA S	STL-DIS-NUCLEAR MEDICINE	B230-01-JC
161168	SIEMENS HEALTHCARE	SYMBIA S SPECT CAMERA SYSTEM	SYMBIA S	STL-DIS-NUCLEAR MEDICINE	B232-01-JC
113591	SIEMENS MEDICAL SYSTEMS	3T MRI	MAGNETOM SKYRA FIT 3.0T	STL-DIS-NUCLEAR MEDICINE	A279-01-JC
129345	SIEMENS HEALTHCARE INC	MRI SIEMENS MEDICAL SOLUTIONS MAGNETOM	MAGNETOM AERA	STL-DIS-NUCLEAR MEDICINE	A281-01-JC