



North Carolina Department of Health and Human Services  
Division of Health Service Regulation

Pat McCrory  
Governor

Aldona Z. Wos, M.D.  
Ambassador (Ret.)  
Secretary DHHS

Drexdal Pratt  
Division Director

January 13, 2014

W. Stan Taylor, Vice President, Corporate Planning  
WakeMed Health & Hospitals  
3000 New Bern Ave  
Raleigh NC 27610

**Exempt from Review - Replacement Equipment**

Facility: WakeMed Raleigh Campus  
Project Description: Replace CT scanner  
County: Wake  
FID #: 943528

Dear Mr. Taylor:

In response to your letter of December 4, 2013, the above referenced proposal is exempt from certificate of need review in accordance with N.C.G.S 131E-184(f). Therefore, you may proceed to acquire, without a certificate of need, the Siemens Somatom Definition Flash 128-slice CT scanner to replace the existing Philips Brilliance 16 CT scanner [Serial # 3340]. This determination is based on your representations that the existing unit will be removed from North Carolina and will not be used again in the State without first obtaining a certificate of need. Further please be advised that as soon as the replacement equipment is acquired, you must provide the CON Section and the Medical Facilities Planning Section with the serial number of the new equipment to update the inventory, if not already provided.

Moreover, you need to contact the Construction to determine if they have any requirements for development of the proposed project.

It should be noted that this Agency's position is based solely on the facts represented by you and that any change in facts as represented would require further consideration by this Agency and a separate determination. If you have any questions concerning this matter, please feel free to contact this office.

Sincerely,

Michael J. McKillip  
Project Analyst

Martha J. Frisone, Interim Chief  
Certificate of Need Section

cc: Construction Section, DHSR



**Certificate of Need Section**

www.ncdhhs.gov

Telephone: 919-855-3873 • Fax: 919-733-8139

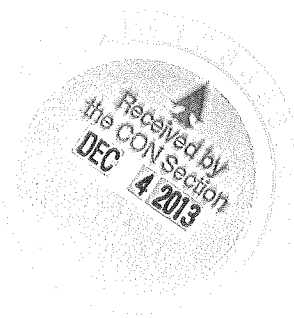
Location: Edgerton Building • 809 Ruggles Drive • Raleigh, NC 27603

Mailing Address: 2704 Mail Service Center • Raleigh, NC 27699-2704

An Equal Opportunity/ Affirmative Action Employer



*Mike*



943528

WakeMed 

WakeMed Health & Hospitals

3000 New Bern Avenue  
Raleigh, North Carolina 27610  
919-350-8000

December 4, 2013

**HAND-DELIVERED**

Mr. Michael J. McKillip, Project Analyst  
Division of Health Service Regulation  
Certificate of Need Section  
2704 Mail Service Center  
Raleigh, NC 27699-2704

**Re: Request for Exemption from Review to Replace One Unit of CT Equipment at WakeMed Raleigh Campus**

Dear Mr. McKillip:

This letter is to inform you of WakeMed's intent to replace one unit of fixed computed tomography (CT) equipment at WakeMed Raleigh Campus. Replacement of this equipment will allow WakeMed to continue to provide quality of care and technology that meet the needs of its patients. WakeMed will purchase a Siemens SOMATOM Definition Flash 128-slice CT scanner, replacing an 11-year old CT scanner which has outdated technology and inferior image quality. The new CT scanner will allow for faster scanning times, which will improve patient throughput, reduce patient exposure to radiation, provide enhanced image quality, and reduce maintenance costs and equipment downtime.

The unit of CT equipment proposed for replacement was originally acquired in 1987 through a certificate of need application (Project No. J-2784-86). Please see Attachment 1 for a copy of the CON. The original equipment was replaced in 1993, and again in 2003 with the scanner currently in use.

The estimated total cost of this project is \$2,455,744, including \$1,659,513 for the replacement CT scanner. Please see Attachment 2 for the equipment quote from the vendor, as well as Attachment 3 for the Project Capital Cost worksheet and Certified Cost Estimate. The equipment to be replaced, a Philips Brilliance 16 unit, is assumed to have salvage value of \$45,000, and will be un-installed and removed from service. Please see Attachment 4 for the Equipment Comparison Chart.

The proposed equipment replacement project will not change the inventory of fixed CT scanners at WakeMed Raleigh Campus or in Wake County. Further, the project will not change current hospital operations. Renovations to the Imaging Services Department will be required to accommodate the new equipment but will not result in the offering of any new institutional health service. Please see Attachment 5 for line drawings and site plan showing the location of the project on the WakeMed Raleigh Main Campus.

Recent amendments to the CON Statute, passed in 2013 by the General Assembly in Session Law 2013-360, Section 12G.3(b) and Session Law 2013-363, Section 4.6, exempt from certificate of need review the purchase of replacement equipment costing over \$2 million. Specifically, G.S. 131E-184 was amended to add the following subsections:

- (f) *The Department shall exempt from certificate of need review the purchase of any replacement equipment that exceeds the two million dollar (\$2,000,000) threshold set forth in G.S. 131E-176(22) if all of the following conditions are met:*
- (1) *The equipment being replaced is located on the main campus.*
  - (2) *The Department has previously issued a certificate of need for the equipment being replaced. This subdivision does not apply if a certificate of need was not required at the time the equipment being replaced was initially purchased by the licensed health service facility.*
  - (3) *The licensed health service facility proposing to purchase the replacement equipment shall provide prior written notice to the Department, along with supporting documentation to demonstrate that it meets the exemption criteria of this subsection.*
- (g) *The Department shall exempt from certificate of need review any capital expenditure that exceeds the two million dollars (\$2,000,000) threshold set forth in G.S. 131E-176(16b), if all the following conditions are met:*
- (1) *The sole purpose of the capital expenditure is to renovate, replace on the same site, or expand the entirety or a portion of an existing health service facility that is located on the main campus.*
  - (2) *The capital expenditure does not result in (i) a change in bed capacity as defined in G.S. 131E-176(5) or (ii) the addition of a health service facility or any other new institutional health service other than that allowed in G.S. 131E-176(16)b.*
  - (3) *The licensed health service facility proposing to incur the capital expenditure shall provide prior written notice to the Department, along with supporting documentation that it meets the exemption criteria of this subsection.*

G.S. 131E-176 was also amended to add a new definition:

- (14n) *"Main campus" means all of the following for the purposes of G.S. 131E-184(f) and (g) only:*
- a. *The site of the main building from which a licensed health service facility provides clinical patient services and exercises financial and administrative control over the entire facility, including the buildings and grounds adjacent to that main building.*

- b. Other areas and structures that are not strictly contiguous to the main building but are located within 250 yards of the main building.*

WakeMed believes this project meets each of the applicable criteria set forth in G.S. 131E-184(f) and (g). The proposed project will be located on the main campus of WakeMed Raleigh Campus, located at 3000 New Bern Avenue, Raleigh, NC 27610, which is the main building from which WakeMed Raleigh provides clinical patient services and exercises financial and administrative control over WakeMed Raleigh. Therefore, WakeMed believes the project is exempt from certificate of need review. We are requesting a ruling from your office as to whether we may proceed with this project without a CON.

Thank you for your attention to this matter. If you have questions or require additional information, please contact Robbie Roberts at 919-350-8023.

Sincerely,



W. Stan Taylor  
Vice President, Corporate Planning

Attachments

# State Of North Carolina

Department Of Human Resources CON 4130

Division Of Facility Services

## Certificate Of Need

Project Identification Number J-2784-86 Effective Date April 4, 1987

Issued to: Wake County Hospital System, Inc.  
3000 New Bern Avenue  
Raleigh, North Carolina 27610

The North Carolina Department of Human Resources, pursuant to the North Carolina Health Planning and Resource Development Act of 1978, G.S. § 131-175, et seq., as amended and recodified, G.S. §131E-175, et seq., hereby finds and certifies that the new institutional health service proposed by the person listed above is consistent with, or as conditioned is consistent with the plans, standards, and criteria prescribed by the Act and the rules and regulations promulgated thereunder. The findings of the Department are attached hereto and incorporated by reference.

This Certificate affords the person listed above the opportunity to proceed with development of the proposed new institutional health service in a manner consistent with the plans, standards, and criteria prescribed by the Act and the rules and regulations promulgated thereunder. This Certificate includes and is limited to:

SCOPE: Replacement of existing Technical Delta 20/20 CT System with a new TCT-900S CT Scanning System

CONDITIONS: N/A

PHYSICAL LOCATION: Wake Medical Center Radiology Department  
 3000 New Bern Avenue, Raleigh, North Carolina 27610

MAXIMUM CAPITAL EXPENDITURE: \$914,640

TIMETABLE: Ordering Equipment - April 2, 1987  
 Completion of Construction - January 31, 1988  
 Arrival of Equipment - December 31, 1987  
 Service Available - February 1, 1988

FIRST PROGRESS REPORT DUE: April 30, 1987

This Certificate is limited to the person listed above and is not transferable or assignable. This Certificate may be withdrawn as provided in G.S. §131E-189, and the rules and regulations promulgated thereunder.

Issuance of this Certificate does not supplant provisions or requirements embodied in codes, ordinances, statutes other than G.S. §131E-175, et seq., rules regulations or guidelines administered or enforced by municipal, state or federal agencies or the agent thereof.

N.A. D D

# SIEMENS

Siemens Medical Solutions USA, Inc.  
51 Valley Stream Parkway, Malvern, PA 19355  
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE  
Stephen Argo - (336) 210-6178

Customer Number: 0000011224

Date: 11/20/2013

**WAKE MED HOSPITAL**  
3000 NEW BERN AVE  
RALEIGH, NC 27610

Siemens Medical Solutions USA, Inc. is pleased to submit the following quotation for the products and services described herein at the stated prices and terms, subject to your acceptance of the terms and conditions on the face and back hereof, and on any attachment hereto.

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Proposal valid until 1/04/2014

Trade-in of existing Philips CT scanner required.  
POS service agreement required.  
Training Quote 1-57KR2K must be combined with System Quote 1-4GYQFU.

This proposal includes the trade-in of equipment referenced in Trade Sheet Project #2012-2017.

This Quotation includes a competitive conversion promotion of \$100,000 which is contingent on Customer returning the existing unit to Siemens at time of installation of the new unit. Siemens has estimated the fair market value of the old unit to be \$45,000.

Accepted and Agreed to by:

**Siemens Medical Solutions USA, Inc.**

**WAKE MED HOSPITAL**

By (sign): \_\_\_\_\_  
 Name: Stephen Argo  
 Title: Account Executive  
 Date: \_\_\_\_\_

By (sign): \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Date: \_\_\_\_\_

**All pages of the signed proposal must be returned to Siemens to process the order - Thank you.**

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51 Valley Stream Parkway, Malvern, PA 19355  
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE  
Stephen Argo - (336) 210-6178

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**Quote Nr:** 1-4GYQFU Rev. 4

**Terms of Payment:** 00% Down, 80% Delivery, 20% Installation  
Free On Board: Destination

**Purchasing Agreement:** NOVATION (UHC, VHA, Provista)

NOVATION (UHC, VHA, Provista) terms and conditions apply to Quote Nr 1-4GYQFU

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## SOMATOM Definition Flash

All items listed below are included for this system: (See Detailed Technical Specifications at end of Proposal.)

Qty	Part No.	Item Description	Extended Price
1	14430738	<b>SOMATOM Definition Flash</b> The SOMATOM Definition Flash features second generation Dual Source CT, using two X-ray sources and two new Stellar Detectors at the same time, to open a door to unprecedented levels of patient friendliness with the speed to cover the entire thorax in less than a second - if necessary even without breath hold. Besides, it enables reduction in dose for all scans, resulting, e.g. in dose down to sub-mSv for cardiac imaging. In its second generation, Dual Energy automatically provides a second contrast for the best possible diagnosis without any extra dose. The revolutionary new Stellar Detectors are the first fully integrated detectors that minimize electronic noise and cross-talk through their TrueSignal Technology. They take CT imaging where it has never gone before by generating ultra-thin 0.5 mm slices with the Edge Technology. With the highest spatial resolution in CT they visualize even finest image details, for example for more accurate stenosis quantification, plaque and stent analysis. Finally, FAST CARE focuses on patient-centric productivity. FAST functions simplify time-consuming and complex procedures, such as scan or recon preparations, ideally to a single click, for more reproducible and quicker results. The new additional CARE Features continuously reduce radiation dose to the lowest achievable minimum in every scan from pediatric to bariatric imaging - while preserving the image quality - to make the benefits of CT scanning safer for your patients.	\$1,181,145
1	14430820	<b>SAFIRE #AWP</b> The Sinogram Affirmed Iterative Reconstruction (SAFIRE) enhances spatial resolution, reduces image noise and increases sharpness by introducing multiple iteration steps in the reconstruction process. The resulting higher image quality enables to reduce dose by up to 60%*. *In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. The following test method was used to determine a 54 to 60% dose reduction when using the SAFIRE reconstruction software. Noise, CT numbers, homogeneity, low-contrast resolution and high contrast resolution were assessed in a Gammex 438 phantom. Low dose data reconstructed with SAFIRE showed the same image quality compared to full dose data based on this test. Data on file.	\$84,368
1	14433314	<b>FAST Iterative Reconstruction</b> The Sinogram Affirmed Iterative Reconstruction (SAFIRE) allows a reconstruction performance up to 20 frames per second in clinical routine.	\$0

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Qty	Part No.	Item Description	Extended Price
1	14420827	<b>FAST CARE Platform</b> Siemens' unique FAST CARE platform is set to raise the standard of patient-centric productivity. Utilizing FAST - Fully Assisting Scanner Technologies - typically time-consuming and complex procedures during the scan process are extremely simplified and automated, not only improving workflow efficiency, but optimizing the clinical outcome by creating reproducible results, making diagnosis more reliable and reducing patient burden through streamlined examinations. Siemens' desire for as little radiation exposure as possible lies at the heart of the CARE - Combined Applications to Reduce Exposure - research and development philosophy offering a unique portfolio of dose saving features, many of them being introduced as industry's first.	\$0
1	14420834	<b>CARE Child</b> Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and protocols	\$0
1	14420832	<b>FAST Advanced Package</b> Utilizing Siemens' unique FAST - Fully Assisting Scanner Technologies - time-consuming and complex procedures such as scan or recon preparations are extremely simplified - ideally reduced to a single click. The FAST Advanced Packages offers an attractive bundle of FAST features to comprehensively optimize scan and recon preparations.	\$0
1	14420828	<b>FAST Planning #AWP</b> Immediate, organ-based setting of scan and recon ranges aiming for a faster and more standardized workflow at the scanner.	\$0
1	14420829	<b>FAST Spine #AWP</b> Accurate and anatomically aligned preparation of spine recons with just a single click.	\$0
1	14420831	<b>FAST Cardio Wizard</b> On-screen step-by-step guide to cardiac scanning for higher reliability and reproducibility in cardiac CT.	\$0
1	14428036	<b>CARE Contrast III</b> Integrated solution for a simplified bolus injector coupling. It synchronizes scan and contrast injection and transfers the injector protocol data in the patient protocol, in the e-logbook and to MPPS (if configured).	\$7,232
1	14410507	<b>X-CARE</b> Partial scanning to reduce direct X-ray exposure for the most dose-sensitive body regions, e.g. the breasts, thyroid gland or eye lens	\$12,053
1	14402943	<b>Extended Field of View</b> Software program with special reconstruction algorithms that allow for visualization of objects using a FOV up to 78 cm (non-diagnostic image quality). License to use software on a single unit.	\$1,928
1	14410504	<b>Adaptive 4D Spiral Plus</b> The unique Adaptive 4D Spiral Plus moves beyond fixed detector limitations to provide full coverage of any organ in 4D. It introduces up to 48 cm range for dynamic CTA imaging and 4D Noise Reduction to significantly improve image quality with no increase in dose or, alternately, reduce dose up to 50 % without compromising image quality (4D Noise Reduction requires Volume Perfusion CT Neuro or Body).	\$28,926
1	14410478	<b>z-UHR incl. UHR</b> z-UHR/UHR functionality provides significantly improved spatial resolution.	\$21,695
1	14410337	<b>CT Replacement Def. Flash</b> SOMATOM Definition Flash base configuration.	\$0



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Qty	Part No.	Item Description	Extended Price
1	14410339	<b>syngo Dual Energy Scan with SPS</b> The syngo Dual Energy Scan with SPS (Selective Photon Shield) option allows the use of both SOMATOM Definition Flash X-ray sources simultaneously at different energies, while the Selective Photon Shield reduces dose and at the same time increases energy separation by blocking unnecessary parts of the energy spectrum. syngo Dual Energy offers the possibility to acquire two spiral data sets simultaneously from a single scan running the tubes at 80/140 kV or 100/140 kV. The results are two data sets with diverse information.	\$21,695
1	14428553	<b>FAST DE (DE WorkStream 4D)</b> FAST Dual Energy (DE) is a 4D workflow for the Dual Energy data with direct generation of axial, sagittal, coronal, or double-oblique images from standard Dual Energy scanning protocols. The Advantage: the elimination of time consuming, error prone, manual reconstruction steps and a reduction of data volume up to a factor of 10, since virtually all diagnostic information is captured in 3D slices.	\$0
1	14406485	<b>Keyboard English</b> Keyboard in the above-mentioned language.	\$0
1	14403163	<b>Hose pipe 30 m insulated</b> Hose pipes to connect the "Cooling System" with the gantry.	\$0
1	14402889	<b>Cable loom 25 m</b> Cable loom used to connect the power distribution system (PDS) with the gantry.	\$0
1	14419013	<b>Multi Purpose Table Flash</b> The Multi Purpose table is especially designed for multi disciplinary use, while still enabling ultra-fast spiral scanning up to 400 mm/s (458 mm/s with HeartView Flash). It's flexible design allows to exchange table tops for routine radiology, Trauma, RTP or bariatric use.	\$36,158
1	14408233	<b>Physiological Monitoring Module</b> The Physiological Monitoring Module allows to connect a 3 Channel ECG cable for ECG controlled cardiac acquisition.	\$0
1	14403008	<b>ECG Cable IEC2 #D</b> ECG cable, IEC2 (AHA/US color coding).	\$0
1	14408231	<b>High Cap. Patient &amp; Trauma Tab.Top</b> The high capacity and trauma table top offers the capability to support up to 307 kg/676 lbs of patient weight. It allows easy positioning and transfer from and to the table, due to its flat surface. Special accessories and an extended table top width of 530 mm ensure a safe and comfortable positioning for obese patients.	\$24,105
1	14408232	<b>High Cap. Patient &amp; Trauma Acc Kit</b> The High capacity and Trauma accessory kit contains additional Patient restraint set with a width of 400mm and additional table extensions for feet and head.	\$1,928
1	14414739	<b>Mattress for Bariatric Table Top</b> This mat is used for scanning non-bariatric patients on the flat, bariatric table top. Placing this mat on the bariatric table top eliminates the need to exchange the table top when non-bariatric patients are scanned. This mat has a curved profile and enables comfortable positioning of non-bariatric patients.	\$1,928
1	14402956	<b>Computer Desk</b> New CT desk to accommodate the control components and color monitor. Width: 1200 mm, Depth: 800 mm, Height: 720 mm.	\$530
1	14402933	<b>Computer Cabinet</b> New cabinet to accommodate the computer system and UPS. Matched to the design of the control console table. Width: 800 mm, Depth: 800 mm, Height: 720 mm	\$675

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Stephen Argo - (336) 210-6178

Qty	Part No.	Item Description	Extended Price
1	14410506	<b>HeartView Flash</b> Scanning technique and program for ECG controlled data acquisition and image reconstruction with lowest possible dose. Dual Source acquisition mode with single segment reconstruction enables heart-rate independent temporal resolution of 75 ms (factor 2 higher than single source acquisition with same parameter) that allows to reliably scan high heart rates, e.g. in acute chest pain evaluation, in coronary visualization, and in functional analysis of the heart.	\$120,525
1	14410349	<b>Cardio BestPhase Plus #AWP</b> Cardio BestPhase, a software dedicated to automatically detect the optimal phase for motionless coronary visualization. The phase is defined in either end-systole, end-diastole or both timepoints and automatically reconstructed. Includes DirectViewing™, a tool for real time navigation through full volumes of up to 24 heart phases by using an integrated fast 3D volume viewer, available both on the Examination and Recon subtask card. Furthermore it provides easy VRT visualization of the coronaries with removal of all parts of the chest in up to 20 phases within 15 seconds. DirectViewing™ completes the workflow of Cardio BestPhase™ by giving you the flexibility to individually visualize phases for all coronary arteries.	\$21,695
1	14410479	<b>syngo Volume Perfusion CT Neuro#AWP</b> Fully automated 3 dimensional syngo Volume Perfusion CT - Neuro facilitates quantitative 3D volume evaluation for differential diagnosis of ischemic stroke and supports simultaneous multislice processing as well as the stringent time and workflow requirements in an emergency setting where time is of the essence.	\$21,695
1	14420838	<b>syngo CT.3D Workplace #CTWP</b> A dedicated syngo CT processing workplace, designed to optimize data management at the CT scanner.	\$43,389
1	14430821	<b>SAFIRE #CTWP</b> The Sinogram Affirmed Iterative Reconstruction (SAFIRE) enhances spatial resolution, reduces image noise and increases sharpness by introducing multiple iteration steps in the reconstruction process. The resulting higher image quality enables to reduce dose by up to 60%*.	\$0
1	14420911	<b>FAST Spine #CTWP</b> Accurate and anatomically aligned preparation of spine recons with just a single click.	\$0
1	14420997	<b>FAST Planning #CTWP</b> Immediate, organ-based setting of scan and recon ranges aiming for a faster and more standardized workflow at the scanner.	\$0
1	14428558	<b>CARE Profile #CTWP</b> CARE Profile, a part of the FAST CARE platform, visualizes the dose distribution along the topogram prior to the scan.	\$0
1	14414501	<b>syngo Dual Energy #CTWP</b> The syngo(r) Dual Energy option allows the initial evaluation of Dual Energy DICOM data. Requires the syngo Dual Energy Scan option. The resulting two data sets (80/140 kV or 100/140 kV) that contain diverse information can be reviewed with a generic viewer located on a dedicated syngo task card.	\$0
1	14414703	<b>syngo Dual Energy Advanced #CTWP</b> In combination with syngo(r) Dual Energy, syngo Dual Energy Advanced offers all new applications that open the door to a new world of characterization, visualizing the chemical composition of material. These Dual Energy applications enable a faster and more reliable diagnosis.	\$84,368
1	14406485	<b>Keyboard English</b> Keyboard in the above-mentioned language.	\$0

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Qty	Part No.	Item Description	Extended Price
1	14402893	<b>Cable 25m # syngo CTWP</b> 25 meter connection between CT workplace and CT system. Contains both, power and network connection between workplace and the CT system, makes additional power supply unnecessary.	\$0
1	14402933	<b>Computer Cabinet</b> New cabinet to accommodate the computer system and UPS. Matched to the design of the control console table. Width: 800 mm, Depth: 800 mm, Height: 720 mm	\$675
1	CT_PM	<b>CT Project Management</b> A Siemens Project Manager (PM) will be the single point of contact for the implementation of your Siemen's equipment. The assigned PM will work with the customer's facilities management, architect or building contractor to assist you in ensuring that your site is ready for installation. Your PM will provide initial and final drawings and will coordinate the scheduling of the equipment, installation, and rigging, as well as the initiation of on-site clinical education.	\$0
1	CT_STD_RIG_I NST	<b>CT Standard Rigging and Installation</b> This quotation includes standard rigging and installation of your CT new system. Standard rigging into a room with reasonable access, as determined by Siemens Project Management, during standard working hours (Mon. - Fri./ 8 a.m. to 5 p.m.) It remains the responsibility of the Customer to prepare the room in accordance with the SIEMENS planning documents. Any special rigging requirements (Crane, stairs, etc.) and/or special site requirements (e.g. removal of existing systems, etc.) is an incremental cost and the responsibility of the Customer. All other "out of scope" charges (not covered by the standard rigging and installation) will be identified during the site assessment and remain the responsibility of the Customer.	\$0
1	CT_PR_FLSH_ CC_BON	<b>Flash Comp Conversion Bonus</b>	-\$100,000
1	M2SCT222LDF	<b>Stellant Dual Flow CT Inj.(Ceiling-long)</b>	\$25,371
1	M2ISI900SN	<b>Medrad ISI900 interface, POS</b>	\$5,014
1	CTSP4002	<b>CT SLICKER; SENSATION AND VOLUME ZOOM</b>	\$318
1	4SPAS014	<b>Low Contrast CT Phantom &amp; Holder</b>	\$2,600
1	FAST_ADJUST	<b>FAST Adjust</b> FAST Adjust: assists the user to handle system settings in a fast and easy way by automatically solving of conflicts within user defined limits by one single click on the FAST Adjust button. The limits for scan time and tube current per scan are defined via the Scan Protocol Assistant. FAST Adjust offers an undo functionality to return to previously set values.	\$0
1	FAST_SCAN_A SSIST	<b>FAST Scan Assistant</b> FAST Scan Assistant: An intuitive user interface for solving conflicts by changing the scan time, resp. the pitch and/or the maximum tube current manually.	\$0
1	CARE_KV	<b>CARE KV</b> CARE kV: First automated, organ-sensitive voltage setting to improve image quality and contrast-to-noise-ratio while optimizing dose and potentially reducing it by up to 60%.	\$0
1	CARE_PROFL E	<b>CARE Profile</b> CARE Profile: Visualization of the dose distribution along the topogram prior to the scan	\$0
1	CARE_DASHB OARD	<b>CARE Dashboard</b> Visualization of activated dose reduction features and technologies for each scan range of an examination to analyze and manage the dose to be applied in the scan	\$0
1	DOSE_NOTIFI CATION	<b>Dose Notification</b> Dose Notification: As requested by the new release of the standard IEC 60601 3rd edition, the SOMATOM Definition AS provides the ability to set dose reference values (CTDIvol, DLP) for each scan range. If these reference values are exceeded the Dose Notification window informs the user.	\$0

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Qty	Part No.	Item Description	Extended Price
1	DOSE_ALERT	<b>Dose Alert</b> Dose Alert: As requested by the new release of the standard IEC 60601 3rd edition, the SOMATOM Definition automatically adds up CTDIvol and DLP depending on z-position (scan axis). The Dose Alert window appears, if either of these cumulative values exceeds a user-defined threshold.	\$0
1	ADAPT_DOSE _SHIELD	<b>Adaptive Dose Shield</b> Adaptive Dose Shield for spiral acquisition to eliminate pre- and post-spiral over-radiation.	\$0
1	CARE_DOSE4 D	<b>CARE Dose4D</b> CARE Dose4D delivers the highest possible image quality at the lowest possible dose for patients - maximum detail, minimum dose. Adaptive dose modulation for up to 60% dose reduction	\$0
1	CT_BUDG_AD DL_RIG	<b>Budgetary Add'l/Out of Scope Rigging</b>	\$3,000
<b>System Total:</b>			<b>\$1,659,513</b>

**FINANCING:** The equipment listed above may be financed through Siemens. Ask us about our full range of financial products that can be tailored to meet your business and cash flow requirements. For further information, please contact your local Sales Representative.

**ACCESSORIES:** Don't forget to ask us about our line of OEM imaging accessories to complete your purchase. All accessories can be purchased or financed as part of this order. To purchase accessories directly or to receive our accessories catalog, please call us directly at 1-888-222-9944 or contact your local Sales Representative.

**COMPLIANCE:** Compliance with legal and internal regulations is an integral part of all business processes at Siemens. Possible infringements can be reported to our Helpdesk "Tell us" function at [www.siemens.com/tell-us](http://www.siemens.com/tell-us).

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## Siemens Medical Solutions USA, Inc. General Terms and Conditions

### 1. GENERAL

**1.1 Contract Terms.** These terms and conditions constitute an integral part of any contract between Seller and Purchaser identified on the first page hereof and shall govern the sale of the products identified in such contract ("Products"). Seller shall not be bound by, and specifically objects to, any terms, conditions or other provisions which are different from or in addition to the provisions of this Agreement (even if provided to Seller concurrently with this Agreement), unless Seller specifically agrees to any such provision in a writing signed by Seller. Neither Seller's lack of objection to any such terms, nor delivery of the Products or provision of any services hereunder, shall constitute the agreement of Seller to any such terms. Purchaser acknowledges that this is a commercial and not a consumer transaction.

**1.2 Acceptance.** Purchaser shall be deemed to have assented to, and to have waived any objection to, this Agreement upon the earliest to occur of any of the following: Purchaser's completion or execution of this Agreement; Purchaser's acceptance of all or any part of the Products; Purchaser's issuance of a purchase order for any Products identified on Seller's quotation or proposal; or delivery of the Products to the common carrier for shipment pursuant hereto.

**1.3 Refurbished/Used Products.** For Products identified on this Agreement as used or refurbished Products, these Products have been previously owned and used. When delivered to Purchaser, the Products may have received mechanical, electrical and/or cosmetic reconditioning, as needed, and will comply with the manufacturer's specifications. Since pre-owned Products may be offered simultaneously to several customers, the sale of such Products to Purchaser cannot be guaranteed and is subject to continuing availability at the time Purchaser accepts Seller's offer to sell the Products. If the Products are no longer available, Seller will use its best efforts to identify other products in its inventory that may be suitable for purchase by Purchaser, and if substitute products are not acceptable to Purchaser, then Seller will cancel the order and refund to Purchaser any deposits previously paid. The warranty period for any used or refurbished Products will be separately stated on the quotation.

**1.4 Third Party Products.** If this Agreement includes the sale of third party products not manufactured by Seller, then Purchaser agrees and acknowledges that (a) Purchaser has made the selection of these products on its own, (b) the products are being acquired by Seller solely at the request of and for the benefit of Purchaser, in order to eliminate the need for Purchaser to issue a separate purchase order to the manufacturer of the products, (c) no representation, warranty or guarantee has been made by Seller with respect to the products, (d) the obligation of Purchaser to pay Seller for the products is absolute and unconditional, (e) Purchaser will indemnify and hold Seller harmless from and against any and all claims, regardless of the form of action, related to, resulting from or caused by the products or any work or service provided by the manufacturer of the products or any other party, (f) use of the products may be subject to Purchaser's agreement to comply with any software licensing terms imposed by the manufacturer, as well as any applicable laws, rule and regulations; and (g) the manufacturer, and not Seller, is solely responsible for any required installation, testing, validation, tracking, product recall, warranty service, maintenance, support, and complaint handling, as well as any other applicable FDA regulatory requirements, and the Purchaser will look solely to the manufacturer regarding these services and will assert no claim against Seller with respect to these products.

### 2. PRICES

**2.1 Quotations.** Unless otherwise agreed to in writing or set forth in the quotation, all prices quoted by Seller are based on U.S. dollars, and include standard and customary packaging. F.O.B. terms are set forth in Section 6.2 hereof. Domestic prices apply only to purchasers located in, and who will use the Products in, the U.S. International prices apply to all purchasers located outside of, or who will use or ship or facilitate shipment of the Products outside of, the U.S. Unless otherwise stated, the quotation shall only be valid for forty-five (45) days from the date of the quotation.

**2.2 Delay in Acceptance of Delivery.** Should the agreed delivery date be postponed by Purchaser, Seller shall have the right to deliver the Products to storage at Purchaser's risk and expense, and payments due upon delivery shall become due when Seller is ready to deliver.

**2.3 Escalation.** Unless otherwise agreed to in writing, except as to Products to be delivered within six (6) months of Seller's acceptance of Purchaser's order, Seller reserves the right to increase its prices to those in effect at the time of shipment.

### 3. TAXES

**3.1** Any sales, use or manufacturer's tax which may be imposed upon the sale or use of Products, or any property tax levied after readiness to ship, or any

excise tax, license or similar fee required under this transaction, shall be in addition to the quoted prices and shall be paid by Purchaser. Notwithstanding the foregoing, Seller agrees to honor any valid exemption certificate provided by Purchaser.

### 4. TERMS OF PAYMENT; DEFAULT

**4.1 Payments; Due Date.** Unless otherwise set forth in the quotation, Seller's payment terms are as follows: an initial deposit of 10% of the purchase price for each Product is due upon submission of the purchase order, an additional 80% of the purchase price is due upon delivery of each Product, and the final 10% of the purchase price is due upon completion of installation or when the Products are available for first patient use, whichever occurs first. Unless otherwise agreed, all payments other than the initial deposit are due net thirty (30) days from the date of invoice. Seller shall have no obligation to complete installation until the payment due upon delivery is received. All amounts payable pursuant to this Agreement are denominated in United States dollars, and Purchaser shall pay all such amount in lawful money of the United States. Partial shipments shall be billed as made, and payments for such shipments will be made in accordance with the foregoing payment terms.

**4.2 Late Payment.** A service charge of 1½% per month, not to exceed the maximum rate allowed by law, shall be made on any portion of Purchaser's outstanding balance which is not paid within thirty (30) days after invoice date, which charge shall be determined and compounded on a daily basis from the due date until the date paid. Payment of such service charge shall not excuse or cure Purchaser's breach or default for late payment.

**4.3 Payment of Lesser Amount.** If Purchaser pays, or Seller otherwise receives, a lesser amount than the full amount provided for under this Agreement, such payment or receipt shall not constitute or be construed other than as on account of the earliest amount due Seller. Seller may accept any check or payment in any amount without prejudice to Seller's right to recover the balance of the amount due or to pursue any other right or remedy. No endorsement or statement on any check or payment or in any letter accompanying a check or payment or elsewhere shall constitute or be construed as an accord or satisfaction.

**4.4 Where Payment Due Upon Installation or Completion.** Should any terms of payment provide for either full or partial payment upon completion of installation or thereafter, and completion of installation is delayed for any reason for which Seller is not responsible, then the Products shall be deemed installed upon delivery and the balance of payments shall be due no later than thirty (30) days from the delivery date regardless of the actual installation date.

**4.5 Default; Termination.** Each of the following shall constitute an event of default under this Agreement: (i) a failure by Purchaser to make any payment due Seller within ten (10) days of receipt of written notice of non-payment from Seller; (ii) a failure by Purchaser to perform any other obligation under this Agreement within thirty (30) days of receipt of written notice from Seller; (iii) a default by Purchaser under any other obligation to or agreement with Seller or Siemens Financial Services, Inc., or any assignee of the foregoing (e.g., a promissory note, lease, rental agreement, license agreement or purchase contract); or (iv) the commencement of any insolvency, bankruptcy or similar proceedings by or against Purchaser (including any assignment by Purchaser for the benefit of creditors). Upon the occurrence of any event of default, at Seller's election: (a) the entire amount of any indebtedness and obligation due Seller under this Agreement and interest thereon shall become immediately due and payable without notice, demand, or period of grace; (b) Seller may suspend the performance of any of Seller's obligations hereunder, including, but not limited to, obligations relating to delivery, installation and warranty services; (c) Purchaser shall put Seller in possession of the Products upon demand; (d) Seller may enter any premises where the Products are located and take possession of the Products without notice or demand and without legal proceedings; (e) at the request of Seller, Purchaser shall assemble the Products and make them available to Seller at a place designated by Seller which is reasonable and convenient to all parties; (f) Seller may sell or otherwise dispose of all or any part of the Products and apply the proceeds thereof against any indebtedness or obligation of Purchaser under this Agreement (Purchaser agrees that a period of 10 days from the time notice is sent to Purchaser shall be a reasonable period of notification of sale or other disposition of the Products by or for Seller); (g) if this Agreement or any indebtedness or obligation of Purchaser under this Agreement is referred to an attorney for collection or realization, Purchaser shall pay to Seller all costs of collection and realization (including, without limitation, a reasonable sum for attorneys' fees, expenses of title search, all court costs and other legal expenses) incurred thereby; and (h) Purchaser shall pay any deficiency remaining after collection of or realization by Seller on the Products. In addition, Seller may terminate this Agreement upon written notice to Purchaser

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in the event that Purchaser is not approved for credit or upon the occurrence of any material adverse change in the financial condition or business operations of Purchaser.

**4.6 Financing.** Notwithstanding any arrangement that Purchaser may make for the financing of the purchase price of the Products, the parties agree that any such financing arrangement shall have no effect on the Purchaser's payment obligations under this Agreement, including but not limited to Sections 4.1 and 4.2 above.

## 5. EXPORT TERMS

**5.1** Unless other arrangements have been made, payment on export orders shall be made by irrevocable confirmed letter of credit, payable in U.S. dollars against Seller's invoice and standard shipping documents. Such letter of credit shall be in an amount equal to the full purchase price of the Products and shall be established in a U.S. bank acceptable to Seller. Purchaser shall procure all necessary permits and licenses for shipment and compliance with any governmental regulations concerning control of final destination of Products.

**5.2** Purchaser acknowledges that Seller is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal and usage of the Products provided under this Agreement, including any export license requirements. Purchaser agrees that such Products shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Seller of its obligations hereunder that compliance with such export laws and regulations be maintained at all times. **PURCHASER AGREES TO INDEMNIFY, DEFEND AND HOLD SELLER HARMLESS FROM ANY AND ALL COSTS, LIABILITIES, PENALTIES, SANCTIONS AND FINES RELATED TO NON-COMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.** If Purchaser purchases a Product at the domestic price and exports such Product, or transfers such Product to a third party for export, outside of the U.S., Purchaser shall pay to Seller the difference between the domestic price and the international retail price of such Product pursuant to the payment terms set forth herein. Purchaser shall deliver to Seller, upon Seller's request, written assurance regarding compliance with this section in form and content acceptable to Seller.

## 6. DELIVERY, RISK OF LOSS

**6.1 Delivery Date.** Delivery and installation dates will be established by mutual agreement of the parties. Seller shall make every reasonable effort to meet the agreed upon delivery date(s), but shall not be liable for any failure to meet such date(s). Partial shipments may be made.

**6.2 Risk of Loss; Title Transfer.** Unless otherwise agreed to in writing, the following shall apply:

(a) For Products that do not require installation by Seller, and for options and add-on products purchased subsequent to delivery and installation of Products purchased under this Agreement, delivery shall be complete upon transfer of possession to common carrier, F.O.B. Shipping Point, whereupon title to and all risk of loss, damage to or destruction of the Products shall pass to Purchaser.

(b) For Products that require installation by Seller, delivery shall be complete upon delivery of the Products to Purchaser's designated site, F.O.B. Destination; title to and all risk of loss, damage to or destruction of such Products shall pass to Purchaser upon completion of the installation.

(c) All freight charges and other transportation, packing and insurance costs, license fees, custom duties and other similar charges shall be the sole responsibility of Purchaser unless included in the purchase price or otherwise agreed to in writing by Seller. In the event of any loss or damage to any of the Products during shipment, Seller and Purchaser shall cooperate in making a claim against the carrier.

## 7. SECURITY INTEREST/FILING

**7.1** Purchaser grants to Seller a security interest in the Products (and all accessories and replacements thereto and all proceeds thereof) until payment in full by Purchaser and satisfaction of all other obligations of Purchaser hereunder. Purchaser hereby (i) authorizes Seller to file (and Purchaser shall promptly execute, if requested by Seller) and (ii) irrevocably appoints Seller its agent and attorney-in-fact to execute in the name of Purchaser and file, with such authorities and at such locations as Seller may deem appropriate, any Uniform Commercial Code financing statements with respect to the Products and/or this Agreement. Purchaser further represents and covenants that (a) it will keep the Products in good order and repair until the purchase price has been paid in full, (b) it will promptly pay all taxes and assessments upon the Products or the use thereof, (c) it will not attempt to transfer any interest in the Products until the purchase price has been paid in full, and (d) it is solvent and financially capable of paying the full purchase price for the Products.

## 8. CHANGES, CANCELLATION, AND RETURN

**8.1** Orders accepted by Seller are not subject to change except upon Seller's written agreement.

**8.2** Orders accepted by Seller are noncancellable by Purchaser except upon Seller's written consent and payment by Purchaser of a cancellation charge equal to 10% of the price of the affected Products, plus any shipping, insurance, inspection and refurbishment charges; the cost of providing any training, education, site evaluation or other services completed by Seller; and any return, cancellation or restocking fees with respect to any Third Party Products ordered by Seller on behalf of Purchaser. Seller may retain any payments received from Purchaser up to the amount of the cancellation charge. In no event can an order be cancelled by Purchaser or Products be returned to Seller after shipment.

**8.3** Seller shall have the right to change the manufacture and/or design of its Products if, in the judgment of Seller, such change does not alter the general function of the Products.

## 9. FORCE MAJEURE

**9.1** Seller shall not be liable for any loss or damage for delay in delivery, inability to install or any other failure to perform due to causes beyond its reasonable control including, but not limited to, acts of government or compliance with any governmental rules or regulations, acts of God or the public, war, civil commotion, blockades, embargoes, calamities, floods, fires, earthquakes, explosions, storms, strikes, lockouts, labor disputes, or unavailability of labor, raw materials, power or supplies. Should such a delay occur, Seller may reasonably extend delivery or production schedules or, at its option, cancel the order in whole or part without liability other than to return any unearned deposit or prepayment.

## 10. WARRANTY

**10.1** Seller warrants that the Products manufactured by Seller and sold hereunder shall be free from defects in material or workmanship under normal use and service for the warranty period. The final assembled Products shall be new although they may include certain used, reworked or refurbished parts and components (e.g., circuit boards) that comply with performance and reliability specifications and controls. Seller's obligation under this warranty is limited, at Seller's option, to the repair or replacement of the Product or any part thereof. Unless otherwise set forth in the Product Warranty attached hereto and incorporated herein by reference, the warranty period shall commence upon the earlier of the date that the Products have been installed in accordance with Section 12.6 hereof (which date shall be confirmed in writing by Seller) or first patient use, and shall continue for 12 consecutive months. Seller makes no warranty for any Products made by persons other than Seller or its affiliates, and Purchaser's sole warranty therefor, if any, is the original manufacturer's warranty, which Seller agrees to pass on to Purchaser, as applicable. The warranty provided by Seller under this Section 10 extends only to the original Purchaser, unless the Purchaser obtains the Seller's prior written consent with respect to any sale or other transfer of the Equipment during the term of the warranty.

**10.2** No warranty extended by Seller shall apply to any Products which have been damaged by fire, accident, misuse, abuse, negligence, improper application or alteration or by a force majeure occurrence as described in Section 9 hereof or by the Purchaser's failure to operate the Products in accordance with the manufacturer's instructions or to maintain the recommended operating environment and line conditions; which are defective due to unauthorized attempts to repair, relocate, maintain, service, add to or modify the Products by the Purchaser or any third party or due to the attachment and/or use of non-Seller supplied parts, equipment or software without Seller's prior written approval; which failed due to causes from within non-Seller supplied equipment, parts or software including, but not limited to, problems with the Purchaser's network; or which have been damaged from the use of operating supplies or consumable parts not approved by Seller. In addition, there is no warranty coverage for any transducer or probe failure due to events such as cracking from high impact drops, cable rupture from rolling equipment over the cable, delamination from cleaning with inappropriate solutions, or TEE bite marks. Seller's obligation under this warranty is limited to the repair or replacement, at Seller's option, of defective parts. Seller may effectuate such repair at Purchaser's facility, and Purchaser shall furnish Seller safe and sufficient access for such repair. Repair or replacement may be with parts or products that are new, used or refurbished. Repairs or replacements shall not interrupt, extend or prolong the term of the warranty. Purchaser shall, upon Seller's request, return the noncomplying Product or part to Seller with all transportation charges prepaid, but shall not return any Product or part to Seller without Seller's prior written authorization. Purchaser shall pay Seller its normal charges for service and parts for any inspection, repair or replacement that falls outside the warranty set forth in Section 10.1. Seller's warranty does not apply to consumable materials, disposables, supplies, accessories and collateral equipment, except as specifically stated in writing or as otherwise set

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forth in the Product Warranty attached hereto and incorporated herein by reference, nor to products or parts thereof supplied by Purchaser.

**10.3** This warranty is made on condition that immediate written notice of any noncompliance be given to Seller and Seller's inspection reveals that Purchaser's claim is covered under the terms of the warranty (i.e., that the noncompliance is due to traceable defects in original materials and/or workmanship).

**10.4** Purchaser shall provide Seller with both on-site and remote access to the Products. The remote access shall be provided through the Purchaser's network as is reasonably necessary for Seller to provide warranty services under this Agreement. Remote access will be established through a broadband internet-based connection to either a Purchaser owned or Seller provided secure end-point. The method of connection will be a Peer-to-Peer VPN IPsec tunnel (non-client based) with specific inbound and outbound port requirements.

**10.5** Warranty service will be provided without charge during Seller's regular working hours (8:30-5:00), Monday through Friday, except Seller's recognized holidays. If Purchaser requires that service be performed outside these hours, such service can be made available at an additional charge, at Seller's then current rates. The obligations of Seller described in this section are Seller's only obligations and Purchaser's sole and exclusive remedy for a breach of product warranty.

**10.6 SELLER MAKES NO WARRANTY OTHER THAN THE ONE SET FORTH HEREIN AND IN THE ATTACHED PRODUCT WARRANTY COVERING THE APPLICABLE PRODUCT CATEGORY. SUCH WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES, AND SUCH CONSTITUTES THE ONLY WARRANTY MADE WITH RESPECT TO THE PRODUCTS AND ANY DEFECT, DEFICIENCY OR NONCONFORMITY IN ANY PRODUCT, SERVICE OR OTHER ITEM FURNISHED UNDER THIS AGREEMENT.**

**10.7** In the event of any inconsistencies between the terms of this Section 10 and the terms of the attached Product Warranty, the terms of the attached Product Warranty shall prevail.

## 11. LIMITATION OF LIABILITY

**11.1** In no event shall Seller's liability hereunder exceed the actual loss or damage sustained by Purchaser, up to the purchase price of the Products. The foregoing limitation of liability shall not apply to claims for bodily injury or damages to real property or tangible personal property to the extent arising from Seller's negligence or a product defect.

**11.2 SELLER SHALL NOT BE LIABLE FOR ANY LOSS OF USE, REVENUE OR ANTICIPATED PROFITS; COST OF SUBSTITUTE PRODUCTS OR SERVICES; LOSS OF STORED, TRANSMITTED OR RECORDED DATA; OR FOR ANY INDIRECT, INCIDENTAL, UNFORESEEN, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES WHETHER BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY THEREOF, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE SALE OR USE OF THE PRODUCTS. THE FOREGOING IS A SEPARATE, ESSENTIAL TERM OF THIS AGREEMENT AND SHALL BE EFFECTIVE UPON THE FAILURE OF ANY REMEDY, EXCLUSIVE OR NOT.**

## 12. INSTALLATION - ADDITIONAL CHARGES

**12.1 General.** Unless otherwise expressly stipulated in writing, the Products covered hereby shall be installed by and at the expense of Seller except that Seller shall not provide rigging or site preparation services unless otherwise agreed to in writing by Seller for an additional charge. Seller will not install accessory items such as cabinets, illuminators, darkroom equipment or processors for X-Ray and CT equipment, unless otherwise agreed to in writing by Seller.

**12.2 Installation by Seller.** If Seller specifies it will install the Products, the following applies: subject to fulfillment of the obligations set forth in Section 12.4 below, Seller shall install the Products and connect them to the requisite safety switches and power lines to be installed by Purchaser. Except as otherwise specified below, if such installation and connection are performed by Seller's technical personnel, prices shown include the cost thereof, provided that the installation and connection can be performed within the Continental United States or Puerto Rico and during normal business hours. Any overtime charges or other special expenses shall be additional charges to the prices shown.

**12.3 Trade Unions.** In the event that a trade union, or unions, or other local labor conditions prevent Seller from performing the above work with its own employees or contractors, then Purchaser shall either make all required arrangements with the trade union, or unions, to permit Seller to complete the work or shall provide the personnel, at Purchaser's sole cost and expense.

Moreover, any additional cost incurred by Seller and related to such labor disputes shall be paid by the Purchaser and Seller's obligations under such circumstances will be limited to providing engineering supervision of installation and connection of the Products to existing wiring.

**12.4 Purchaser's Obligations.** Purchaser shall, at its expense, provide all proper and necessary labor and materials for plumbing service, carpentry work, conduit wiring, and other preparations required for such installation and connection. All such labor and materials shall be completed and available at the time of delivery of the Products by Seller. Additionally, Purchaser shall provide free access to the installation site and, if necessary, safe and secure space thereon for storage of Products and equipment prior to installation by Seller. Purchaser shall be responsible, at its sole cost and expense, for obtaining all permits, licenses and approvals required by any federal, state or local authorities in connection with the installation and operation of the Products, including but not limited to any certificate of need and zoning variances. Purchaser shall provide a suitable environment for the Products and shall ensure, at its sole cost and expense, that its premises are free of asbestos, hazardous conditions and any concealed, unknown or dangerous conditions and that all site requirements are met. Seller shall delay its work until Purchaser has completed the removal of any asbestos or other hazardous materials or has taken any other precautions and completed any other work required by applicable regulations. Purchaser shall reimburse Seller for any increased costs and expenses incurred by Seller that are the result of or are caused by any such delay. In the event that Seller is requested to supervise the installation of the Products, it remains the Purchaser's responsibility to comply with local regulations. Seller is not an architect and all drawings furnished by Seller are not construction drawings.

**12.5 Regulatory Reporting.** In the event that any regulatory activity is performed by anyone other than Seller's authorized personnel, then Purchaser shall be responsible for fulfilling any and all reporting requirements.

**12.6 Completion of Installation.** Installation shall be complete upon the conclusion of final calibration and checkout under Seller's standard procedures to verify that the Products meet applicable written performance specifications. Notwithstanding the foregoing, first use of the Products by Purchaser, its agents or employees for any purpose after delivery shall constitute completion of installation.

## 13. PATENT, COPYRIGHT AND OTHER INFRINGEMENT CLAIMS

**13.1 Infringement by Seller.** Seller warrants that the Products manufactured by Seller and sold hereunder do not infringe any U.S. patent or copyright. If Purchaser receives a claim that any such Products, or parts thereof, infringe upon the rights of others under any U.S. patent or copyright, Purchaser shall notify Seller immediately in writing. As to all infringement claims relating to Products or parts manufactured by Seller or one of its affiliates:

(a) Purchaser shall give Seller information, assistance and exclusive authority to evaluate, defend and settle such claims.

(b) Seller shall then, at its own expense, defend or settle such claims, procure for Purchaser the right to use the Products, or remove or modify them to avoid infringement. If none of these alternatives is available on terms reasonable to Seller, then Purchaser shall return the Products to Seller and Seller shall refund to Purchaser the purchase price paid by Purchaser less reasonable depreciation for Purchaser's use of the Products. The foregoing states Seller's entire obligation and liability, and Purchaser's sole remedy, for claims of infringement.

**13.2 Infringement by Purchaser.** If some or all of the Products sold hereunder are made by Seller pursuant to drawings or specifications furnished by Purchaser, or if Purchaser modifies or combines, operates or uses the Products other than as specified by Seller or with any product, data, software, apparatus or program not provided or approved by Seller, then the indemnity obligation of Seller under Section 13.1 shall be null and void and should a claim be made that such Products infringe the rights of any third party under patent, copyright or otherwise, then Purchaser shall indemnify, defend and hold Seller harmless against any liability or expense, including reasonable attorneys' fees, incurred by Seller in connection therewith.

## 14. DESIGNS AND TRADE SECRETS; LICENSE; CONFIDENTIALITY

**14.1** Any drawings, data, designs, software programs or other technical information supplied by Seller to Purchaser in connection with the sale of the Products are not included in the sale of the Products to Purchaser, shall remain Seller's property and shall at all times be held in confidence by Purchaser. Such information shall not be reproduced or disclosed to others without Seller's prior written consent.

**14.2** For all goods purchased hereunder which utilize software for their operation, such "Applications Software" shall be licensed to Purchaser under the terms of Seller's Software License Schedule attached hereto.

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14.3 Diagnostic/Maintenance Software is not included under Section 14.2 above, is available only as a special option under a separate Diagnostic Materials License Agreement, and may be subject to a separate licensing fee.

14.4 Seller and Purchaser shall maintain the confidentiality of any information provided or disclosed to the other party relating to the business, customers and/or patients of the disclosing party, as well as this Agreement and its terms (including the pricing and other financial terms under which the Purchaser will be purchasing the Products). Each party shall use reasonable care to protect the confidentiality of the information disclosed, but no less than the degree of care it would use to protect its own confidential information, and shall only disclose the other party's confidential information to its employees and agents having a need to know this information. The obligations of confidentiality set forth herein shall not apply to any information in the public domain at the time of disclosure or that is required to be disclosed by court order or by law.

## 15. ENGINEERING CHANGES

15.1 Seller makes no representation that engineering changes which may be announced in the future will be suitable for use on, or in connection with, the Products.

## 16. ASSIGNMENT

16.1 Neither party may assign any rights or obligations under this Agreement without the prior written consent of the other and any attempt to do so shall be void, except that Seller may assign this Agreement without consent to any subsidiary or affiliated company, and may delegate to authorized subcontractors or service suppliers any work to be performed under this Agreement so long as Seller remains liable for the performance of its obligations under this Agreement. This Agreement shall inure to and be binding upon the parties and their respective successors, permitted assigns and legal representatives. Seller shall have no obligations under this Agreement to any assignee of Purchaser that is not approved by Seller in advance.

## 17. COSTS AND FEES

17.1 In the event that any dispute or difference is brought arising from or relating to this Agreement or the breach, termination or validity thereof, the prevailing party shall be entitled to recover from the other party all reasonable attorneys' fees incurred, together with such other expenses, costs and disbursements as may be allowed by law.

## 18. MODIFICATION

18.1 This Agreement may not be changed, modified or amended except in writing signed by duly authorized representatives of the parties.

## 19. GOVERNING LAW; WAIVER OF JURY TRIAL

19.1 This Agreement shall be governed by the laws of the Commonwealth of Pennsylvania.

19.2 EACH OF THE PARTIES EXPRESSLY WAIVES ALL RIGHTS TO A JURY TRIAL IN CONNECTION WITH ANY DISPUTE UNDER THIS AGREEMENT.

## 20. COST REPORTING

20.1 Purchaser agrees that it will fully and accurately account for and report in all cost reports and otherwise fully and accurately disclose to federal and state health care program payors and fully and accurately reflect where and as appropriate to the applicable reimbursement methodology, all services and other items, including any and all discounts, received from Seller under this Agreement, in compliance with all applicable laws, rules and regulations, including but not limited to the Social Security Act and implementing regulations relating to Medicare, Medicaid and other federal and state health care reimbursement programs.

## 21. INTEGRATION

21.1 These terms and conditions, including any attachments or other documents incorporated by reference herein, constitute the entire agreement and the complete and exclusive statement of agreement with respect to the subject matter hereof, and supersede any and all prior agreements, understandings and communications between the parties with respect to the Products.

## 22. SEVERABILITY; HEADINGS

22.1 No provision of this Agreement which may be deemed unenforceable will in any way invalidate any other portion or provision of this Agreement. Section headings are for convenience only and will have no substantive effect.

## 23. WAIVER

23.1 No failure and no delay in exercising, on the part of any party, any right under this Agreement will operate as a waiver thereof, nor will any single or partial exercise of any right preclude the further exercise of any other right.

## 24. NOTICES

24.1 Any notice or other communication under this Agreement shall be deemed properly given if given in writing and delivered in person or mailed, properly addressed and stamped with the required postage, to the intended recipient at its address specified on the face hereof. Either party may from time to time change such address by giving the other party notice of such change in accordance with this section.

## 25. RIGHTS CUMULATIVE

25.1 The rights and remedies afforded to Seller under this Agreement are in addition to, and do not in anyway limit, any other rights or remedies afforded to Seller by any other agreement, by law or otherwise.

## 26. END USER CERTIFICATION

26.1 Purchaser represents, warrants and covenants that it is acquiring the Products for its own end use and not for reselling, leasing or transferring to a third party (except for lease-back financings).

03/2012 Rev



## Software License Schedule to the Siemens Medical Solutions USA, Inc. General Terms and Conditions

### 1. DEFINITIONS: The following definitions apply to this Schedule:

**"Agreement"** shall mean the attached (i) Quotation for Products and/or Services including the Terms and Conditions of Sale and applicable schedules; and/or (ii) Software License Agreement describing the software licensed herein and the specific system for which the license is issued.

**"Licensor"** shall mean Siemens Medical Solutions USA, Inc.

**"Licensee"** shall mean the end-user to whom Licensor provides Software or Documentation for its internal use under the Agreement.

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## TRADE-IN EQUIPMENT REQUIREMENTS

**THE FOLLOWING APPLIES ONLY TO THE EXTENT THAT THE QUOTATION INCLUDES AN EQUIPMENT TRADE-IN. THESE REQUIREMENTS ARE IN ADDITION TO ANY OTHER REFERENCED TERMS AND CONDITIONS ON THE QUOTATION AND SHALL REMAIN IN EFFECT REGARDLESS OF ANY CONTRARY LANGUAGE IN THE QUOTATION.**

This Quotation includes the trade-in equipment described herein and referenced by either the Project Number identified in the Quotation hereof (non-Ultrasound) or the Trade Allowance Part Number (Ultrasound) as further described in the associated Trade Sheet which is incorporated herein by reference. Purchaser certifies that the description of the trade-in equipment as set forth on the Trade Sheet is a true and accurate representation of the equipment, and that the equipment is in good working condition unless otherwise noted on the Trade Sheet.

The trade-in equipment must be made available for removal no later than turnover of the new equipment. Purchaser must vacate the room of all items not listed on the Trade Sheet, or otherwise clearly identify all items listed on the Trade Sheet, prior to the start of the de-installation. If this is not done, Seller will have no liability for items which are subsequently removed or scrapped. If the de-installation or return of the trade-in equipment is delayed by Purchaser for reasons other than a force majeure event, or if upon inspection by Seller it is determined that the equipment does not meet the manufacturer's operating specifications, or if any items listed as included on the Trade Sheet are not made available at the time of de-installation, then trade-in value will be re-evaluated and any loss in value or additional costs incurred by Seller shall be deducted from the established trade-in value and the pricing set forth on this Quotation will be adjusted by change order. In the event that access to the trade-in equipment is denied past 14 days post-turnover, then Purchaser shall pay to Seller a rental fee in the amount 10% of the total trade-in value plus any additional value provided by an Elevate/Promotional program included in this Quotation (no less than \$1000) for each month, or part thereof, that access is denied. In addition, if the purchase and installation of the new equipment covered by this Quotation is not completed, then Seller shall invoice Purchaser for all costs and expenses incurred by Seller in connection with the de-installation and removal of the trade-in equipment, including but not limited to labor, materials, rigging out, and transportation, which costs shall be paid by Purchaser within thirty (30) days of the invoice date.

Purchaser further acknowledges and agrees that (i) the trade-in equipment will be free and clear of all liens and encumbrances including, but not limited to, unpaid leases and loans, and that upon request, it will execute a bill of sale or other documents reasonably satisfactory to Siemens to transfer title and ownership of the equipment to Seller, (ii) it is Purchaser's sole responsibility to delete all protected health information and any other confidential information from the equipment prior to de-installation, without damaging or cannibalizing the equipment or otherwise affecting the operation of the equipment in accordance with its specifications, (iii) the equipment, including all updates, upgrades, modifications, enhancements, revisions, software, S/W disks and manuals, shall be returned to Siemens in good operating condition, reasonable wear and tear excepted, and (iv) to the extent not prohibited by applicable law, Purchaser shall indemnify and hold Seller harmless from and against any and all claims, demands, causes of action, damages, liability, costs and expenses (including reasonable attorney's fees) resulting or arising from Purchaser's failure to comply with item (i) above.

FOR MR SYSTEMS: cryogen levels must be least 75% upon time of de-installation. FOR MOBILE SYSTEMS: system must be road worthy and a state issued title transferring ownership to Seller must be received by Seller prior to the removal of the mobile system. FOR MODALITY TRADE SYSTEMS (non-Ultrasound): The trade-in equipment must be available for inspection within two weeks of the scheduled de-installation date. In addition, Purchaser must provide a clear path for the removal of the trade-in equipment. Any additional costs due to the need to use a larger rig (other than a standard 80 ton rig), as well as any construction activities, street closings, permits, etc., required to de-install/remove the equipment are out-of-scope costs and will be the responsibility of Purchaser.

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## CT Warranty Information

<u>Equipment</u> (New Systems and "Proven Excellence" Refurbished Systems Only)	<u>Period of Warranty</u> <sup>1</sup>	<u>Coverage</u>	
CT System (not including consumables)	12 month	Full Warranty (parts & labor, including all tubes)	
<b><u>Post-Warranty (after expiration of system warranty) – Replacement parts only!</u></b>			
Straton	Prorated to a maximum of 160,000 scan seconds or 12 month whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(160,000 - \text{scan-seconds used}) / 160,000 * 100$
Single Tank tube with rotating anode (non spiral) (Rotanx)	Prorated to a maximum of 60,000 scans or 12 month whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(60,000 - \text{scans used}) / 60,000 * 100$
Single Tank tube with rotating anode (spiral) (Rotanx)	Prorated to a maximum of 130,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(130,000 - \text{scanseconds used}) / 130,000 * 100$
Opti 151 and Opti 157 tube	Prorated to a maximum of 60,000 scans or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(60,000 - \text{scans used}) / 60,000 * 100$
All other Dura tubes and Opti 131 tube	Prorated to a maximum of 130,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(130,000 - \text{scanseconds used}) / 130,000 * 100$
Dura Akron B tubes	Prorated to a maximum of 150,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(150,000 - \text{scanseconds used}) / 150,000 * 100$
Dura Akron Q tubes	Prorated to a maximum of 120,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = $(120,000 - \text{scanseconds used}) / 120,000 * 100$
Cathode-ray tubes (CRT)	12 months		
Spare Parts	6 months	Parts only	
Consumables	Not covered		

Note: Optional extended warranty coverage can be obtained by purchase of a service agreement.

<sup>1</sup> Period of warranty commences from the date of first use or completion of installation, whichever occurs first. In the event the completion of installation is delayed for reasons beyond Siemens' control, the stated warranty period shall commence 60 days after delivery of equipment.

## Detailed Technical Specifications

### SOMATOM Definition Flash

Part No. / Product	Description
<p>14430738  <b>SOMATOM Definition Flash</b></p>	<p>The SOMATOM Definition Flash is Siemens' state-of-the-art high-end Dual Source CT that provides the possibility to scan with Flash speed for lowest dose.</p> <p>The SOMATOM Definition Flash is founded on the two highly integrated Siemens' Stellar Hardware Detector systems, with two revolutionary STRATON X-ray sources, the Flash Spiral scanning up to 450 mm/s, the z-Sharp Technology, Dual Energy with Selective Photon Shield and a range of proven CARE solutions from X-CARE to the Adaptive Dose Shield.</p> <p>Using Siemens' z-Sharp technology the SOMATOM Definition Flash can provide the fastest sub-millimeter volume coverage at industry's highest spatial resolution. The high rotation time of 0.28 seconds delivers excellent temporal resolution up to 75 ms independent from the heart rate.</p> <p>The SOMATOM Definition Flash opens a door to new levels of patient friendliness with the speed to cover the entire thorax in less than a second - if necessary even without a breath hold. A whole-body scan requires only five seconds, while for perfusion or dynamic vascular imaging long-range scans become routine and pediatric scans become sub-second procedures. Your patients will be off the table faster than ever before - with positive feelings about their scan experience. Flash is also the solution for scanning your most difficult patients (i.e. obese and trauma patients, restless children, patients who cannot hold their breath for long), thus causing no time-consuming interruptions in your daily practice.</p> <p>And now Siemens is once again redefining speed: the new SOMATOM Definition Flash, with the new FAST CARE technology platform, allows you to maximize clinical outcomes - meaning you will have the best possible clinical results, but with significantly less resources bound to the CT system. The ultimate goal is to provide you with more time for patients and diagnosis - in effect, patient-centric productivity. The complete examination - from scan preparation, scanning, reconstruction, and data assessment - is streamlined, leading to a fast and reliable diagnosis with less patient burden. Ultimately, the combination of highest image quality and highest patient-centric productivity is the lever to maximizing your clinical outcomes.</p> <p>Maybe even more important - and impressive - is the significant reduction in dose which allows e.g. for sub-mSv scanning in case of cardiac imaging. Furthermore, the second generation of dual source systems also enables the user to acquire Dual Energy data and benefit from Dual Energy post processing without compromising image quality or dose. Due to the introduction of the selective photon shield and the latest technical improvements each scan on the Flash can now become a Dual Energy scan. At the same time, X-CARE protects individual organs and the most radiation-sensitive body regions - for example, female breasts - by accurately and efficiently minimizing exposure while preserving image quality.</p> <p>With the new SOMATOM Definition Flash with FAST CARE, Siemens introduces several innovative Combined Applications to Reduce Exposure (CARE). CARE kV, for instance, is the industry's first tool that automatically solves the complex equation for optimal image quality at lowest possible dose for each individual CT exam while considering tube voltage, tube current, and contrast changes at different voltages and attenuation. This allows you to benefit from the industry's widest tube voltage range - not only 140 kV for bariatric imaging but now, if necessary, also down to 70 kV for new safety and image quality standards in pediatric imaging. Add SAFIRE, the first, raw-data-based iterative reconstruction (with an FDA approved dose saving potential from 54 - 60%), and define low dose for all body regions to take best care of your patients' well-being.</p> <p><b>The SOMATOM Definition Flash System Overview</b></p> <ul style="list-style-type: none"> <li>- Definition Flash Gantry                     <p>The SOMATOM Definition Flash gantry is founded on two highly integrated Siemens' Stellar Hardware Detector systems, with two revolutionary STRATON X-ray sources, the Flash Spiral scanning up to 450 mm/s, the z-Sharp Technology, Dual Energy with Selective Photon Shield and a range of proven CARE solutions from the Adaptive Dose Shield to X-CARE.</p> </li> </ul>

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Part No. / Product	Description
<p>(Continued)            14430738  <b>SOMATOM Definition Flash</b></p>	<p>The 78 cm large bore, the 200 cm scan range - with patient weight up to 307 kg (676 lbs) (opt.) - and the 200 kW generator power, it can scan most acute patients independent of size or condition, helping to save precious time from scan to diagnosis.</p> <p>Its Ultrafast rotation time of 0.28 sec. (optional) leads to acquired (not reconstructed) 75 ms temporal resolution to freeze any cardiac motion even in high and irregular heart rates.</p> <p>The optional Dual Source Flash Spiral mode acquisition of 2 x 128 x 0.6 mm allows for increased scan speed up to 450 mm/s e.g. for pediatric head or chest CT scans without the need of sedation or routine sub-mSv heart examinations in patients with stable/low heart rate and a weight of up to 90kg.</p> <ul style="list-style-type: none"> <li>- <b>Straton MX-P tubes with z-Sharp Technology</b>            The two STRATON sources provide direct oil cooling of the anode, eliminating the need for heat storage capacity (0 MHU). The resulting small and compact design (120 mm diameter) enables an unprecedented cooling rate of 7.3 MHU/min as well as the reliable performance when operating two x-ray sources at an ultrafast rotation time of 0.28 sec.</li> </ul> <p>Utilizing the Flash Spiral scanning technology in combination with Siemens' own z-Sharp Technology it routinely enables the industry's highest isotropic, scan field position and pitch independent spatial resolution. This allows a highly beneficial combination of exceptional image detail and unmatched sub-millimeter volume coverage of 450 mm/sec enabling whole body examinations within sub-seconds and seconds, even without the need for breath hold - adapting to challenging patients such as poly-trauma and incautious or uncooperative patients, leading to an improvement in image quality (e.g. minimized motion artifacts) and patient comfort (e.g. no breath hold, no sedation in pediatric patients).</p> <p>In addition, the STRATON Tubes are equipped with the Adaptive Dose Shields world's first dynamic tube collimation that protects the patient from clinically irrelevant radiation in every spiral scan.</p> <ul style="list-style-type: none"> <li>- <b>Stellar detector</b>            The revolutionary Stellar Detector, the first fully-integrated detector, is designed to minimize electronic noise using Siemens' innovative TrueSignal Technology. It thus significantly improves the signal-to-noise-ratio (SNR). In combination with Siemens' proprietary UFC (Ultra Fast Ceramics) scintillator the SOMATOM Definition Flash acquires 2 x 128 slices per rotation at outstanding dose efficiency.</li> </ul> <p>Herein the new Stellar detector hardware minimizes electronic noise (~20-30%) and cross-talk, through its TrueSignal Technology.</p> <p>By further applying Edge Technology the spatial resolution can now be increased to an unprecedented 0.30 mm in daily clinical routine, which makes it finally suitable for clinical practice as the signal-to-noise ratio is adequate without an additional increase in dose.</p> <p>In combination with z-UHR (optional), it delivers a spatial resolution of 0.24 mm voxel size, allowing to visualize extremely small anatomical structures with exceptional quality, for example the complex inner-ear bones, outstanding fine details of the coronary tree or intracranial, pulmonary, mesenteric, renal and peripheral vessels. It also helps to perform accurate stenosis measurements or stent planning with outstanding precision. <li>- <b>Power Generator</b>            The generator power of up to 2 x 100 kW delivers sufficient resources for every clinical challenge and thus helps to acquire exceptional image quality and save precious time from scan to diagnosis.</li> <li>- <b>Patient table</b>            The patient table with a scan range of up to 200 cm and a load capacity of up to 307 kg / 676 lbs. (optional) in combination with the 78 cm gantry diameter of the SOMATOM Definition Flash virtually adapts to any patient independent of size or condition thus avoiding patient exclusions.</li> <li>- <b>FAST CARE</b>            With the introduction of Siemens' unique FAST CARE platform, the SOMATOM Definition Flash is set to raise the standard of patient-centric productivity. Utilizing FAST - Fully Assisting Scanner Technologies - , typically time-consuming and complex procedures during the scan process are extremely simplified and automated, not only improving workflow efficiency, but optimizing the overall clinical outcome by</li> </p>

Part No. / Product	Description
<p>(Continued)                      14430738                      SOMATOM Definition Flash</p>	<p>creating reproducible results, making diagnosis more reliable and reducing patient burden through streamlined examinations. For example FAST Spine automatically labels all vertebrae and discs after the data acquisition and prepares typical reconstruction ranges to up to 30 minutes in spine examinations.</p> <ul style="list-style-type: none"> <li>- Low Dose with CARE                      Siemens has developed many significant products and protocols that follow the "As Low as Reasonably Achievable" (ALARA) principle to reduce radiation dose to the lowest possible level. This desire for as little radiation exposure as possible lies at the heart of our CARE - Combined Applications to Reduce Exposure - research and development philosophy. The SOMATOM Definition Flash consequently offers a unique portfolio of dose saving features; many of them being industry's first like the Adaptive Dose Shield, CARE kV or 70kV scan modes. Using Siemens' CARE solutions radiation dose can be significantly reduced compared to conventional CT systems.</li> </ul> <p>Clinical Applications</p> <p>The SOMATOM Definition Flash introduces the second generation of Siemens Dual Energy imaging, proven by more than 900 installations worldwide and a wide range of clinical publications. With the all-new Selective Photon Shield and a 25% larger field of view (500 mm FOV visual, 330 mm full Dual Energy FOV), it offers up to 80% increased energy separation and 80/140 kV as well as 100/140 kV modes to adjust even for larger patients, all the while the additional diagnostic information of Dual Energy is available without additional dose (see SOMATOM Flash data sheet; publication list).</p> <p>Adaptive 4D Spiral Plus                      With its unique Adaptive 4D Spiral Plus scan mode (optional) the SOMATOM Definition Flash overcomes the coverage limitations in dynamic CT imaging when using a static detector and allows for up to 48 cm or 18.89" coverage in dynamic CT imaging. It even enables for 4D CT DSA evaluation.</p> <p>3D Interventional Suite                      In addition the SOMATOM Definition Flash optionally offers a built in 3D minimal invasive suite, enabling 3D guided interventions with full control of the radiologist due to the all new wireless in-room control.</p> <p>Neuro BestContrast                      Neuro head image quality is significantly improved with Neuro BestContrast, by optimizing grey/white matter differentiation without increase in radiation dose.</p> <p>HeartView Flash                      With the HeartView CT option the SOMATOM Definition Flash achieves the industries lowest heart rate independent temporal resolution of 75 ms. It allows to reliably scan all heart rates - even highest and irregular heart rates (atrial fibrillation), e.g. in acute chest pain evaluation, in coronary visualization, dynamic myocardial stress perfusion imaging and in functional analysis of the heart.</p> <p>Heart Perfusion (dynamic, stress, quantitative)                      The optional Heart Perfusion mode, for quantitative, dynamic myocardial stress perfusion imaging, is a sequence shuttle mode to dynamically cover up to approximately twice the detector width for myocardial perfusion studies with sufficient temporal resolution of 75 ms even for high heart rates. For a heart rate of 63 beats per minute or less every single heartbeat and for a heart rate of greater than 63 beats per minute every second heartbeat, images were acquired. This it provides sufficient temporal resolution even for high heart rates.</p> <p><b>SOMATOM Definition Flash</b>                      System specification in detail</p> <p><b>1. System Gantry and Detector:</b>                      Aperture: 78 cm; power supplied via low-voltage slip ring.</p> <p>Patient Table: Standard table (200 cm) or Multi-purpose table (opt.) are available. The standard table consists of:</p> <ul style="list-style-type: none"> <li>- Motor-driven table height adjustment from min. 48 cm to max. 92 cm</li> <li>- longitudinal movement of the tabletop 200 cm in increments of 0.5 mm, positioning accuracy +/- 0.25 mm from any direction</li> <li>- Horizontal scan range 200 cm</li> <li>- Control elements on both sides on the front and rear panel of the gantry</li> <li>- Table height can be controlled alternatively by means of foot switch (2</li> </ul>



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<p>(Continued)                      14430738                      SOMATOM Definition                      Flash</p>	<p>each on both sides of the patient table)</p> <ul style="list-style-type: none"> <li>- Max. table load: 227 kg/500 lbs (optional 307kg/676lbs)</li> <li>- Table feed speed: 2-458 mm/s</li> <li>- Distance between gantry front and table base 40 cm, e.g. for convenient positioning of a mobile C-arm between gantry and table or for convenient access during CT-intervention.</li> <li>- Positioning aids: Positioning mattress, mattress protector, head-arm support (inclusive cushion), non-tiltable and tiltable head holders with positioning cushion set, patient restraining system for head fixation, restraining-strap set with body fixation strap that can be directly connected to the patient table top, headrest, table extension with positioning mattress, knee-leg support</li> <li>- 4 pairs of optional Foot Pedals, available for high capacity table, conveniently allow table lifting and lowering from various positions</li> <li>- Optional Multi-purpose table: Additional exchangeable table tops for High-capacity patient and trauma table top; RTP table top</li> <li>- In the case of emergency stop or power failure, the tabletop can also be moved manually in horizontal direction</li> </ul> <p>Scanning system: Adaptive Array Detector (AAD) systems based on UFC (ultra fast ceramics) with 47,104 elements for measurement system A and 30,720 for system B. 2 x 128 detector electronic channels (DAS) utilized for up to 2 x 128 slices/rotation acquisition, and 1,472 for measurement system A and 960 for system B, measuring channels per slice (The measuring system can contain replacement components).</p> <p>In cases of very low signal at the detector (e.g. when scanning bariatric patients), the Adaptive Signal Boost improves image quality by amplifying individual pixels based on an analysis of the surrounding image data. It reduces streaks and noise and maintains the correct HU values for large patients.</p> <p>Spiral acquisition modes: 128 x 0.6 mm, 64 x 0.6 mm, 40 x 0.6 mm, 32 x 0.6 mm, 20 x 0.6 mm, 10 x 0.6 mm, 32 x 1.2 mm, 16 x 0.3 mm*, 8 x 0.3 mm*, 16 x 0.6 mm*, 8 x 0.6 mm*.</p> <p>Sequence acquisition modes 64 x 0.6 mm, 32 x 0.6 mm, 32 x 1.2 mm, 12 x 1.2 mm, 1 x 5 mm, 1 x 10 mm, 8 x 0.3 mm*, 8 x 0.6 mm* (* optional).</p> <p>The scan field diameter is 50 cm.</p> <p>Three laser light markers: Horizontal, sagittal, and vertical laser light that shows the isocenter position of the scan plane.</p> <p><b>2. Tube Assembly:</b>                      Source: The two STRATON sources provide direct oil cooling of the anode, eliminating the need for heat storage capacity (0 MHU). The resulting small and compact design (120 mm diameter) enables an unprecedented cooling rate of 7.3 MHU/min as well as the reliable performance when operating two x-ray sources at an ultrafast rotation time of 0.28 sec.</p> <ul style="list-style-type: none"> <li>- 2 x STRATON high performance X-ray source</li> <li>- Tube current range: Single source 20-800 mA</li> <li>- Dual Source 40-1600 mA</li> <li>- Tube anode heat storage capacity 0 MHU</li> <li>- Cooling rate 7.3 MHU/min (5,400 kJ/min)</li> <li>- Focal spot size according to IEC 60336: 0.7 x 0.7 mm/7°, 0.9 x 1.1 mm/7°</li> <li>- Computer controlled monitoring of anode temperature</li> <li>- Multifan principle with flying focal spot</li> <li>- 2 x Adaptive Dose Shields</li> </ul> <p><b>3. z-Sharp Technology:</b>                      The unique STRATON X-ray source with z-Sharp Technology utilizes an electron beam that is accurately and rapidly deflected, creating two precise focal spots alternating 4,608 times per second. This doubles the X-ray projections reaching each detector element. The two overlapping projections result in an oversampling in z-direction. The resulting measurements interleave half a detector slice width, doubling the scan information without a corresponding increase in dose. Siemens' Stellar Detector hardware and the highly integrated 2 x 128-slice detector electronics enable a virtually simultaneous readout of two projections for each detector element - 2 x 2 x</p>

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<p>(Continued)  <b>14430738</b>  <b>SOMATOM Definition Flash</b></p>	<p>64 slices for every viewing angle - resulting in a full 2 x 128-slice acquisition. z-Sharp Technology, utilizing the STRATON X-ray sources and the Stellar Detector hardware, provides scan speed independent visualization of 0.33 mm isotropic voxels and a corresponding elimination of spiral artifacts in the daily clinical routine at any position within the scan field.</p> <ul style="list-style-type: none"> <li>- 2 x 128-slice acquisition with z-Sharp technology</li> <li>- Industry's highest isotropic and scan field position independent spatial resolution of 0.33 mm voxel size</li> <li>- Visualization of the smallest anatomical structures with exceptional image quality in complex inner-ear bones or small sized vessels such as the intracranial, mesenterical and coronary system. Based on that accurate stenosis measurements or stent planning with outstanding precision are enabled.</li> </ul> <p><b>4. High Power X-ray Generator:</b>                  2 microprocessor-controlled, low-noise high-frequency generators with integrated, automatic self-testing system for continuous monitoring of operation. Settings: High-voltage range 70, 80, 100, 120 and 140 kV; power max. 2 x 100 kW (depends on clinic network) - for no compromises in obese imaging - adjustable in fine steps. The kV Steps are automatically selected through CARE kV based on patient body habitus and examination type for lowest possible dose at constant signal to noise ratio (image quality).</p> <p><b>5. Control and Evaluation Unit:</b>                  Control box: CT control with patient intercom, user-recordable patient instruction system, 30 automatic patient instruction (API) text pairs are available in nine languages.</p> <p><i>syngo Acquisition Workplace:</i> The <i>syngo Acquisition Workplace</i> provides an intelligent and reliable workflow for data acquisition, image reconstruction and routine post-processing at the CT scanner. Built on the unique <i>syngo</i> platform, the <i>syngo Acquisition Workplace</i> is intuitive and user friendly. Computer system: High-performance computer with 1x Xeon QC6700, 2.66GHz, NVIDIA Quadro FX1700 DVI graphics card for fast 3D post-processing. High resolution, flicker free, 19-inch (48 cm) color flat panel display for medical diagnostic applications combining the demanding requirements of medical imaging with the advantages of liquid crystal displays. This display provides a resolution of 1280 x 1024 and has a wide viewing angle, features high contrast even under high ambient light conditions. Display light output stability is ensured by controlled backlight throughout the whole lifetime. Keyboard and mouse, 8 Gbyte RAM, 2 x 146 Gbyte image storage for 260,000 uncompressed images, CD-R 700 MB for 1,100 images. DVD DICOM with 4.7 GB media for 8,400 images. External USB 2.0 devices for data storage are supported (recommended: Iomega 160 Gbyte External Hard Drive Hi-Speed USB 2.0; Maxtor One Touch 160 Gbyte External Hard Drive).</p> <p><b>6. CT Image Computer System:</b>                  Reconstruction computer for the preprocessing and reconstruction of the CT raw data. The reconstruction computer contains of a cluster of 2,2 GHz dual kernel high-performance processors performing the preprocessing and reconstruction of the CT data with up to 50 images per second.</p> <p>Recon time (512 x 512 matrix) up to 60 fps with weighted filtered 3D back projection (WFBP) and z-Sharp technology at full image quality.                  Up to 20 fps with WFBP and iterative reconstruction (SAFIRE) with z-Sharp technology at full image quality. The raw data memory is 3.8 Tbyte.                  External USB 2.0 disks for quick and easy raw data storage are supported</p> <p>Reconstruction fields of 5 cm to 50 cm through raw data zoom with the possibility of freely selecting the image center either prospectively before each scan or retrospectively. Reconstructions of different slice thicknesses from a single raw data record, e.g. lung soft tissue and lung high-contrast with CombiScan, with simultaneous suppression of partial volume artifacts.                  Up to 8 reconstructions per scan range can be predefined with the examination protocol. Patient-related storage of the image and raw data.                  Image display: 1024 x 1024 display matrix; screen splitting configurable up to 64 image segments. CT value scale from -1024 to +3071 HU. For very dense objects, the CT value scale can be extended from -10240 to +30710 HU (extended CT scale) e.g. for suppressing metal artifacts. 10,000 pre definable examination protocols</p> <p><b>7. Cooling System:</b>                  Gantry is cooled with a water/water cooling system. An optional split cooling (water/air) is available to reduce reconstruction efforts and costs.                  System operating temperature: 18-28°C, 20 - 75 % rel. air humidity (not condensing).</p>

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<p>(Continued)                      14430738                      SOMATOM Definition                      Flash</p>	<p><b>8. syngo User Software:</b>  <i>syngo</i> features an intuitive and thus easy-to-learn user interface developed from prototypes in close cooperation with users. <i>syngo</i> visualizes the examination in individual process steps on so-called task cards, such as patient registration or examination card. A large number of functions and input parameters as well as the language used can be selected according to individual requirements. Frequently repeated processes can be automated and saved.</p> <p><b>Patient registration:</b>                      The system can accept patient data in different ways. These include entering the data via keyboard or transfer of a work list via network. DICOM work list: Software module for accepting lists of patient data and exam requirements from a Radiology Information Systems (RIS) via DICOM Get Work list functionality. The program enables very efficient working and ensures consistent patient data. In emergency cases, fast registration is possible. Here the system automatically assigns an emergency number which can later be replaced by the actual patient number. The input profile can be designed individually.</p> <p><b>Examination card:</b>                      The SOMATOM Definition Flash is delivered with a large number of predefined examination protocols (e.g. for pediatric applications), making examination planning a very fast and efficient procedure. Example: A three-phase examination of the liver available as independent protocol only needs to be adapted to the patient's individual situation. Each examination is represented pictorially as a so-called "chronicle", which views the individual phases of the examination separately. This has the advantage that the individual phases of the examination can be accessed quickly and selectively and changes to the protocol can be made easily in graphical mode via drag-and-drop using the mouse. With a so-called routine window, it is possible to adapt individual examination parameters, representing a submenu of the essential parameters and giving information at a glance about the parameterization of the examination.</p> <p><b>Viewing card:</b>                      On the viewing card it is possible to move interactively with the mouse through the image volume of the ongoing examination. The images of different examinations can be displayed simultaneously for comparison. A large number of functions are available for evaluation, documentation and archiving.</p> <p><b>Filming card:</b>                      A virtual film sheet shows a 1:1 display of the film sheets to be printed out, thus enabling an effective preview of filming jobs and rewindowing of the images, as well as providing a large number of evaluation functions. Layout changes are possible interactively with up to 64 images. The printout parameters for the autofilming process running in parallel to acquisition or reconstruction are also defined with the filming card. Freely selectable positioning of images onto film sheet, configurable image text.</p> <p><b>3D card:</b>                      Secondary reconstruction calculation: Real-time MPR for real-time reformatting of secondary reconstructions. Slice orientation: coronary, sagittal, oblique and double-oblique. Secondary reconstructions can be determined from the topogram, other MPR views or from a 3D surface reconstruction. Reconstruction with selectable slice thickness.</p> <p><b>WorkStream4D with Asynchronous Recon:</b>  <i>syngo</i> Workstream 4D, the standardized workflow guide for confident patient management. Up to 8 pre definable axial, coronal, sagittal and oblique MPR and MIP up to sub mm recon jobs possible. The Asynchronous Recon allows for multiple image reconstructions and reformats, parallel to scanning. With this feature, up to eight reconstruction job requests can be loaded into a scan protocol. Immediately upon completion of the scan acquisition, these reconstruction jobs are automatically executed in the background without delaying the start of next patient examination. WorkStream4D eliminates manual reconstruction steps and reduces the data volume up to a factor of 10, since virtually all diagnostic information is captured in 3D slices.</p> <p><b>CT Angio:</b> Software for the reconstruction of angular projections from the images of a spiral data record for the display and diagnosis e.g. of aneurysms, plaques, stenoses, vascular anomalies or vascular origins. MIP: Maximum Intensity Projection, MinIP: Minimum Intensity Projection and Thin MIP available. Interfering or irrelevant parts of the image can be eliminated with the integrated volume editor. The angular projections are reconstructed around a definable axis, whereby the maximum CT values in this direction are selected for each angular projection. The resulting images can be viewed with the CINE function as a series of images with a 3D image effect.</p> <p><b>3D Display:</b> Software for the three-dimensional display of surfaces of a body region from a series of continuous slices, for display and analysis of complex anatomies, e.g. the visceral cranium, pelvis, hips, for the purpose of planning surgical interventions. The 3D objects can be tilted and rotated interactively on the monitor and can also be displayed in relation to multiplanar reconstruction (MPR).</p>

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<p>(Continued)                      14430738                      SOMATOM Definition                      Flash</p>	<p>Volume card: Volume scans of tissues and organs, based on a "region-growing" algorithm and interactive ROI definition.</p> <p>DynEva card: Software for dynamic evaluation of the contrast enhancement in organs and types of tissues, enabling the reconstruction of</p> <ul style="list-style-type: none"> <li>- Time-density curves (up to 5 ROIs)</li> <li>- Peak-enhancement images</li> <li>- Time-to-peak images.</li> </ul> <p>Video Capture and Editing Tool: Software contains integrated solution for imaging and visualization of 4D information, allowing the generation and editing of video files for improved diagnoses, recording and teaching. A wide range of multimedia formats is supported, e.g. AVI, Flash (SWF), GIF, QuickTime (MOV), streaming video.</p> <p>Additional task cards available as an option.</p> <p><b>9. Examination and Evaluation Functions:</b></p> <p>Topogram: scanning perspectives: a.p., p.a., lat.; length of scan field: 128 - 2000 mm; width of scan field: 512 mm, 2.0 - 21 s. The topogram can be switched off manually when the desired examination length is reached.</p> <p>Scan field size: 50 cm. Rotation times (360°): 0.28 s (opt.), 0.33, 0.5, 1.0 s.</p> <p>Slice thickness in sequence: 0.4 (z-UHR*), 0.5 (z-UHR*), 0.5, 0.6, 0.75, 1.0, 1.2, 1.5, 2.0, 2.4, 3.0, 4.0, 4.8, 5.0, 6.0, 7.0, 7.2, 8.0, 10.0, 14.4, 15.0, 20.0 mm (* optional).</p> <p>The Dynamic Multiscan allows continuous sequence scanning without table movement for fast dynamic contrast studies with maximum slice thickness of 38.4 mm. Scan times (full scan) 0.28 (opt.), 0.33, 0.5, 1.0 s.</p> <p>Slice thickness in spiral: 0.4 (z-UHR*), 0.5 (z-UHR*), 0.5, 0.6, 0.75, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 10.0 mm (* optional) real-time image display.</p> <p>Real-time image display for immediate image preview when every second counts. Immediate image reconstruction and display without time delay simultaneously to data acquisition in 512 x 512 matrix size.</p> <p>Spiral Scanning technique for continuous volume scans with continuous table feed in multirotation mode possible. Max. scan time 100 seconds with full low-contrast resolution. Volume length 197 cm with full low-contrast resolution (max. 200 cm scan range possible using multiple automatic ranges). Selection of the pitch factor between 0.35 and 3.4 depending on scan mode. Selection of up to 33 free definable scan ranges per protocol and individual anatomic sections can be successively combined and then scanned automatically. In addition individual anatomic sections can be successively combined and then scanned automatically. Storage of up to 10,000 examination protocols. Rotation times/cycle (360°): 0.28 s (opt.), 0.33, 0.5, 1.0 s.</p> <p>Dynamic Multiscan spiral examination without table feed: Continuous multirotational data acquisition in one slice position with up to 100 scans in uninterrupted, continuous sequence without table feed. Scan cycle time: 0.75 - 60 seconds with quantitative evaluation and graphical display of time-density curves.</p> <p>Adaptive 4D Spiral Plus (optional): Continuous multirotational data acquisition with continuous smooth bi-directional table movement for quantitative evaluation and graphical display of time-density curves over entire organs. It facilitates volume perfusion studies in head (Stroke) and body applications (e.g. liver, kidneys, etc.) for a perfusion range of up to 14 cm/5.51". Moreover it allows dynamic studies up to a scan range of 48.0 cm/18.9", e.g. after aortic stent graft operation or for dynamic vascular (filling) studies of the peripheral vessels.</p> <p>The intelligent algorithm Neuro BestContrast improves native head image quality especially grey/white matter differentiation. Images are decomposed into high and medium/low spatial frequencies. While relevant tissue information is contained in medium and low frequencies noise is dominated by high frequencies. Separate processing of medium and low frequency information improves the tissue contrast without amplifying image noise resulting in a better signal to noise ratio.</p> <p>Image reconstruction and storage: Image reconstruction in full resolution (512 x 512 matrix) takes place during the examination with up to 60 images per second, with full cone beam reconstruction, z-Sharp Technology and full image quality. Reconstruction fields of 5 cm to 50 cm through raw data zoom with the possibility of freely selecting the image center either prospectively before each scan or retrospectively. Reconstructions of different slice thicknesses from a single raw data record, e.g. lung soft tissue and lung high-contrast with CombiScan, with simultaneous suppression of partial volume artifacts. Up to 8 reconstructions per scan range can be predefined</p>

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<p>(Continued)  <b>14430738</b>  <b>SOMATOM Definition Flash</b></p>	<p>with the examination protocol. Patient-related storage of the image and raw data.</p> <p>Image display: 1024 x 1024 display matrix; screen splitting configurable up to 64 image segments; CT value scale from -1024 to +3071 HU. For very dense objects, the CT value scale can be extended from -10240 to +30710 HU (extended CT scale) e.g. for suppressing metal artifacts.</p> <p>Image evaluation: Complete software-controlled image evaluation program for all diagnostic requirements.</p> <p>CINE Display: Dynamic display technique for the visualization of time or volume series. A series of up to 1024 images can be displayed at a frame rate of at least 30 f/s. Automatic or interactive mouse-operated control.</p> <p>Multitasking functions: Simultaneous processing during operation of the scanner.</p> <p>Real-time Display: Image reconstruction in pace with the examination in full image quality (512 x 512 matrix) with up to 40 images/second (with full cone beam reconstruction and z-Sharp Technology).</p> <p>Metro Display: Simultaneous display, processing and evaluation of images from other patients while the current patient is being scanned.</p> <p>Metro Documentation: Simultaneous documentation of images from any previously examined patient while the current patient is being scanned.</p> <p>Metro Copy: Automatic transfer of image data to the <i>syngo</i> CT Workplace (optional) or a DICOM network node.</p> <p><b>10. Network Module:</b>                      For the connection to a local Ethernet (10, 100 Mbit or 1-Gigabit) in order to communicate with networked printers, diagnostic and therapy workstations, RIS or HIS systems and teleradiology routers.</p> <p>Scope of functions:</p> <ul style="list-style-type: none"> <li>- Configurable network stations.</li> <li>- Unlimited selection of stations.</li> <li>- DICOM Standard (Digital Imaging and Communications in Medicine) for the transfer of information between DICOM-compatible units from different manufacturers. The scope of functions is described in detail in the DICOM Conformance Statement, and the standard version comprises the functions Send/Receive, Query/Retrieve and BasicPrint, Work list, Storage Commitment, MPPS (Modality Performed Procedure Step).</li> </ul> <p><b>11. Integrated CARE Solutions:</b>                      UFC Detector: Up to 30% dose reduction compared to conventional CT detectors. High efficiency for low mAs requirements enable best possible image quality with low patient dose.</p> <p>Adaptive Dose Shield: world's first dynamic tube collimation that protects the patient from clinically irrelevant radiation in every spiral scan. Adaptive Dose Shield Both tubes are equipped with an Adaptive Dose Shield and X-CARE allows to reduce direct peripheral exposure in Spiral CT for the most dose-sensitive body regions by up to 40% while preserving constant high image quality e.g. the ovary/breast during a chest CT exam or the eye lenses during neuro CT exams.</p> <p>X-CARE: Partial scanning to reduce direct X-ray exposure for the most dose-sensitive body regions, e.g. the breasts, thyroid gland or eye lens.</p> <p>Flash Spiral scanning: Ultra-fast spiral scanning in Dual Source mode with up to 450 mm/s, allows for additional dose saving especially in ECG-triggered scans*, e.g., cardiac or chest scanning (* optional)</p> <p>CARE Dose4D uses at first an automated adjustment of the dose level depending on patient size based on the attenuation values obtained from the standard (singular) topogram along the patient z axis. In addition CARE Dose4D uses a real-time adaptation of the tube current during the scan based on the actual attenuation of the X-ray beam measured around the patient. It delivers significant x-ray dose reduction (up to 68 %) possible for all body regions scanned compared with standard sequence or spiral scanning;                      Up to 2,320 projections are evaluated per second to optimize the mA level instantaneously. In combination with the extreme adjustment speed of the tube current, CARE Dose4D ensures consistent high quality images in every anatomical position. Thinner axial slices and/or longer scan ranges become possible because of reduced tube loading; It also enables ultra-low dose examinations for pediatric patients.</p> <p>CARE Filter: Specially designed X-ray exposure bow-tie filter installed at the tube collimator. Up to 25% dose</p>

# SIEMENS

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Part No. / Product	Description
<p>(Continued)  <b>14430738</b>  <b>SOMATOM Definition Flash</b></p>	<p>reduction with increased image quality. Additional protocol dependent bow-tie filtration e.g. cardiac and pediatric body protocols.</p> <p>CARE kV          First automated, exam-specific voltage setting to optimize contrast-to-noise-ratio and significantly reduce dose.</p> <p>Pediatric Protocols: Special examination protocols with 80 kV and a large range of adjustable mAs values for optimum adaptation of the radiation exposure to the age and weight of the child to be examined.</p> <p>CARE Topo: Real-time topogram, Manual interruption possible once desired anatomy has been imaged.</p> <p>CARE Bolus: Operating mode for CM-enhancement triggered data acquisition. The objective is optimum utilization of the contrast medium bolus in its "plateau" phase in the target organ. This option has been especially adapted to the increased speed and timing requirements resulting from the multirow capability and faster rotation. The CM enhancement is observed via monitoring scans in a user-defined ROI with a trigger threshold. As soon as the enhancement reaches its predefined threshold, the spiral scan is triggered as quickly as possible. License for software use on one modality.</p> <p><b>12. Siemens Remote Service:</b>          Siemens Remote Service (SRS) offers a wide range of medical equipment-related remote services resulting in increased system availability and efficiency. SRS employs sophisticated authentication and authorization procedures, state-of-the-art encryption technologies and logging routines together with strictly enforced organizational measures that provide optimal patient data security and access protection. The following SRS services are included for all service agreement customers and during warranty period:</p> <p>Remote Diagnosis &amp; Repair: In case of an unforeseen system malfunction, Siemens competent experts may directly connect with the CT system in order to identify the problem quickly. Moreover the remote repair function enables Siemens to often correct software errors immediately. Should an engineer on site be required, Remote Diagnosis &amp; Repair allows Siemens to identify defective parts efficiently and accelerate their delivery, thereby keeping repair times to a minimum.</p> <p>Event Monitoring: Event Monitoring screens the performance of the system. If a parameter deviates from a predefined value, a status message is automatically sent to the Siemens UPTIME Service Center. Service Engineers may evaluate the status message at periodic intervals and may initiate appropriate action within the scope of the service agreement.</p> <p>SOMATOM LifeNet: An information and service portal directly at the CT Scanner consoles, featuring up to date information on CT products, application guides, accessories and training schedules as well as download of the latest scan protocols and 90 day free trial licenses on available software applications.</p> <p>Notes on software use: Use of the entire integrated software, including optional software programs, is restricted exclusively to the application with this system.</p> <p>Note: This product is in compliance with IEC60601-1-2 and fulfills CISPR 11 Class A. Note: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.</p> <p><b>13. The Welcome Package</b>          The package contains a welcome letter, three current versions of the customer magazine SOMATOM Sessions, CARE Analytics CD (dose analysis and evaluation software), three Siemens Mouse Pads, pens and an e-Learning CD</p>
<p><b>14430820</b>  <b>SAFIRE #AWP</b></p>	<p>Dose reduction with CT has been limited by the currently used filtered back projection (FBP) reconstruction algorithm. When using this conventional reconstruction of acquired raw data into image data, a trade-off between spatial resolution and image noise has to be considered. Higher spatial resolution increases the ability to see the smallest detail; however, it is directly correlated with increased image noise in standard filtered back projection reconstructions as they are used in CT scanners today.</p> <p>Iterative reconstruction approaches allow decoupling of spatial resolution and image noise. With the Sinogram Affirmed Iterative Reconstruction (SAFIRE), correction loops are introduced into the image generation process. These iteration loops utilize raw-data information to significantly improve image quality. Additionally, image noise is removed in the iterative corrections without degrading image sharpness. The noise texture of the images is comparable to standard well-established convolution kernels. The new technique results in a significantly superior image quality with reduced noise and increased image sharpness that can be translated to dose savings of up to</p>

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Part No. / Product	Description
<p><i>(Continued)</i> 14430820 SAFIRE #AWP</p>	<p>60%* for a wide range of clinical applications.</p> <p>*In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. The following test method was used to determine a 54 to 60% dose reduction when using the SAFIRE reconstruction software. Noise, CT numbers, homogeneity, low-contrast resolution and high contrast resolution were assessed in a Gammex 438 phantom. Low dose data reconstructed with SAFIRE showed the same image quality compared to full dose data based on this test. Data on file.</p>
<p>14420827 FAST CARE Platform</p>	<p>Siemens has always been at the forefront to deliver highest image quality and reduce radiation dose to the lowest possible level at the same time. But today, an additional barrier has to be mastered to maximize clinical outcome: overcome the growing restrictions and limitation of resources. With FAST CARE, Siemens opens a new chapter in CT, explicitly focusing on the optimization of patient-centric productivity in modern healthcare delivery. With FAST CARE, time-consuming and complex procedures such as scan or recon preparations are extremely simplified – ideally reduced to a single click. The scanning process gets more intuitive and the results become more reproducible.</p> <p>The FAST CARE platform consists the following features:</p> <p>FAST Scan Assistant: An intuitive user interface for solving conflicts by changing the scan time, resp. the pitch and/or the maximum tube current manually.</p> <p>CARE kV: First automated, organ-sensitive voltage setting to improve image quality and contrast-to-noise-ratio while optimizing dose and potentially reducing it by up to 60%.</p> <p>CARE Child: Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and protocols</p> <p>CARE Profile: Visualization of the dose distribution along the topogram prior to the scan</p> <p>CARE Dashboard: Visualization of activated dose reduction features and technologies for each scan range of an examination to analyze and manage the dose to be applied in the scan</p> <p>CARE Dose Configurator: Enhancement of Siemens' renowned real-time dose modulation CARE Dose4D, introducing new reference curves for each body region and for each body habitus allowing to adjust the configuration even more precisely to the patient's anatomy.</p> <p>Dose Notification: As requested by the new release of the standard IEC 60601 3rd editions, the SOMATOM Definition Flash provides the ability to set dose reference values (CTDIvol, DLP) for each scan range. If these reference values are exceeded the Dose Notification window informs the user.</p> <p>Dose Alert: As requested by the new release of the standard IEC 60601 3rd editions, the SOMATOM Definition Flash automatically adds up CTDIvol and DLP depending on z-position (scan axis). The Dose Alert window appears, if either of these cumulative values exceeds a user-defined threshold.</p>
<p>14420834 CARE Child</p>	<p>With Siemens' unique STRATON tubes, the tube voltage can now be reduced to 70kV which helps to reduce radiation exposure to patients. With prior tube technology, the minimum tube voltage setting was 80 kV. The new tube voltage setting of 70 kV helps to further reduce the radiation dose to small pediatric or neonate patients.</p> <p>CARE Child consists of:</p> <ul style="list-style-type: none"> <li>- dedicated 70 kV scan modes</li> <li>- new CARE Dose4D curves for children</li> <li>- respective Children Protocol utilizing these features</li> </ul>
<p>14420832 FAST Advanced Package</p>	<p>The FAST Advanced Package consists the following features:</p> <p>FAST Planning: assists the scan and reconstruction planning, based on a topogram, to provide an easier, faster and standardized workflow in CT scanning. FAST Planning features the selection of the anatomical region of interest from a list prospectively defined scan and reconstruction ranges, automatic detection of the scan region(s) of interest and proposal of corresponding scan range(s) in the topogram (in a narrow or wide lateral FOV), optimized FOV and automatic iso-center adaptation for Head scans.</p>

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Part No. / Product	Description
<p><i>(Continued)</i>  <b>14420832</b>  <b>FAST Advanced Package</b></p>	<p>FAST Spine: provides various modes that automatically create anatomically orientated spine reconstructions based on a 3D volume. It provides an easier, faster and standardized workflow in CT scanning. FAST Spine features automatic segmentation of the spinal canal, automatic labeling of the vertebrae, anatomically oriented slices – (orthogonal to the spinal canal), coronal and sagittal reconstructions which refer to the curvature of the spinal column and more. All modes offer the possibility to adapt the results manually.</p> <p>FAST Adjust: assists the user to handle system settings in a fast and easy way by automatically solving of conflicts within user defined limits by one single click on the FAST Adjust button. The limits for scan time and tube current per scan are defined via the Scan Protocol Assistant. FAST Adjust offers an undo functionality to return to previously set values.</p> <p>FAST Cardio Wizard: Intuitive guidance software, fully integrated in the cardiac workflow. It allows training the cardiac workflow and provides guidance and support during the examination. It is based on the latest cardiac application training material and provides helpful tips to avoid common problems and pit-falls. It features step-by-step on-screen instructions for various cardiac examinations. Text and images are delivered in a default setting based on Siemens' latest application training, but are fully customizable by the user.</p> <p>The FAST Advance Package requires the FAST CARE Platform.            FAST Spine requires Workstream 4D.            FAST Cardio Wizard requires HeartView CT.</p>
<p><b>14420828</b>  <b>FAST Planning #AWP</b></p>	<p>FAST Planning assists the scan and reconstruction planning, based on a topogram, to provide an easier, faster and standardized workflow in CT scanning. FAST Planning features the selection of the anatomical region of interest from a list prospectively defined scan and reconstruction ranges, automatic detection of the scan region(s) of interest and proposal of corresponding scan range(s) in the topogram (in a narrow or wide lateral FOV), optimized FOV and automatic iso-center adaptation for Head scans.</p>
<p><b>14420829</b>  <b>FAST Spine #AWP</b></p>	<p>FAST Spine provides various modes that automatically create anatomically orientated spine reconstructions based on a 3D volume. It provides an easier, faster and standardized workflow in CT scanning. FAST Spine features automatic segmentation of the spinal canal, automatic labeling of the vertebrae, anatomically oriented slices – (orthogonal to the spinal canal), coronal and sagittal reconstructions which refer to the curvature of the spinal column and more. All modes offer the possibility to adapt the results manually.</p> <p>FAST Spine requires Workstream 4D.</p>
<p><b>14420831</b>  <b>FAST Cardio Wizard</b></p>	<p>FAST Wizard Cardio is intuitive guidance software, fully integrated in the cardiac workflow. It allows training the cardiac workflow and provides guidance and support during the examination. It is based on the latest cardiac application training material and provides helpful tips to avoid common problems and pit-falls. It features step-by-step on-screen instructions for various cardiac examinations. Text and images are delivered in a default setting based on Siemens' latest application training, but are fully customizable by the user.</p> <p>The FAST Cardio Wizard requires HeartView CT.</p>
<p><b>14428036</b>  <b>CARE Contrast III</b></p>	<p>CARE Contrast III supports a smart coupling of the CT system and the contrast medium injector to provide an easier, faster and more consistent contrast workflow in CT scanning. It facilitates contrast enhanced clinical workflow by synchronizing CT scan and contrast media injection using a single button control from either the scanner or the injector. It speeds up clinical workflow and allows efficient and confident monitoring of patients for extravasation during contrast media injection and scan delay countdown, even if only one technician is present.</p> <p>Scanner and power injector have CE approval according to Medical Device Directive, Art. 12 for combined medical devices. The CE approval is valid for specific combinations of scanner and injector models and their respective software versions.</p> <p>CARE Contrast III is based on the international standard for the communication between CT and injector (CANopen Application profile for medical diagnostic add-on modules, Part 2: Injector). Due to its open interface technology it is ready for future applications.</p> <p>In addition, the injection parameters are automatically transferred to the patient protocol, the e-logbook and to MPPS (if configured) thus completing the data for the examination therein. With this, no separate documentation is needed resulting in significant workflow improvements: e.g. the injector information is available from the PACS</p>



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<p><i>(Continued)</i> <b>14428036</b> <b>CARE Contrast III</b></p>	<p>when reading the images or it is accessible from the HIS/RIS. The injection parameters are also displayed on the contrast card.</p> <p>CARE Contrast III also fulfils CANopen 425, class 4. This includes contrast protocol definition on the CT scanner (via Scan Protocol Assistant) and linking of contrast protocols with scan protocols. In addition to the synchronized start of scan and injection from either the scanner's user interface or the injector's user interface, CARE Contrast III automatically transfers the injection parameters from the CT scanner to the injector.</p>
<p><b>14402943</b> <b>Extended Field of View</b></p>	<p>In today's clinical environment, there are cases for which it is important to visualize areas outside of the normal 50 cm CT scan field. For this reason, special reconstruction algorithms have been created to allow for visualization of objects using a FOV up to 78 cm. This extra versatility was primarily created to assist with radiation treatment planning applications. The image quality for the area outside the standard 50 cm scan field does not meet the image quality specifications shown in the technical data sheet (non-diagnostic image quality). Image artifacts may be common in the area outside the normal 50 cm scan field, depending on the anatomy scanned.</p>
<p><b>14410504</b> <b>Adaptive 4D Spiral Plus</b></p>	<p>Adaptive 4D Spiral applies a continuously repeated bi-directional table movement, moving the patient smoothly in and out of the gantry over the desired scan range. In stroke assessment, it provides the information not just for a limited section of the disease, but for the whole brain. It assures a reliable assessment of the type and extent of cerebral perfusion disturbances. In addition, it allows to perform perfusion studies over the entire organ in both head and body. Enabling to assess the entire extent of the disease and visualize the function of potential metastasis. Finally it enables the visualization and evaluation of complex intracranial vascular structures in separate phases. Arterial and venous phase are captured in a single scan, but can then also be evaluated separately. So you're able to not only delineate aneurysms and other vascular diseases, but also to exclude occlusions of the aortic vessels and assess venous thrombosis.</p>
<p><b>14410478</b> <b>z-UHR incl. UHR</b></p>	<p>Siemens proprietary z-UHR (z-Ultra High Resolution) option enables previously unachievable image detail with an isotropic resolution of 30 lp/cm (0.17mm) at 0% MTF (+/- 10%). In addition, z-UHR Catphan® measurements demonstrate the industry's highest visible high-contrast resolution of 0.24 mm x 0.24 mm x 0.24 mm. The combination of z-Sharp Technology and z-UHR offers, in daily clinical routine, an isotropic detail in the range of research CsI-aSi flat-panel and Micro CT technology. z-UHR is intended for ultra-high resolution bone-imaging, in particular for small structures such as inner ear, joints or fractures of the bone. The option includes the z-UHR software as well as a dedicated tantalum detector comb.</p>
<p><b>14410339</b> <b>syngo Dual Energy Scan with SPS</b></p>	<p>The X-ray tube's kilo voltage (kV) determines the average energy level of the X-ray beam. Changing the kV setting results in an alteration of photon energy and a corresponding attenuation modification of the materials scanned. In other words, X-ray absorption is energy dependent, e.g. scanning an object with 80 kV results in a different attenuation than with 140 kV. In addition, this attenuation depends also on the type of tissue scanned. Iodine, for instance, has its maximum attenuation at low energy, while its CT-value is only about half in high-energy scans. The attenuation of bones, on the other hand, changes much less when exposed to low-energy scans compared to high-energy examinations. <i>syngo</i> Dual Energy Scan exploits this effect: Two X-ray sources running simultaneously at different energies (80/140 kV or 100/140 kV) acquire two spiral data sets showing different attenuation levels.</p>
<p><b>14428553</b> <b>FAST DE (DE WorkStream 4D)</b></p>	<p>The Asynchronous Recon in FAST DE allows for multiple image reconstructions and reformats, parallel to Dual Energy scanning. With this feature reconstruction job requests can be directly loaded into a scan protocol. Immediately upon completion of the scan acquisition, these reconstruction jobs are automatically executed in the background without delaying the start of next patient examination.</p>
<p><b>14419013</b> <b>Multi Purpose Table Flash</b></p>	<p>The Multi Purpose table allows to quickly exchange table tops depending on the dedicated use. The standard table top with a curved surface and a width of 45mm for a comfortable positioning of the patient allows for all radiology applications.</p> <p>The optional carbon fibre RTP table top is especially designed for radio therapy use with a width of 530mm and is fully compliant with TG-66 guidelines with a deflection of &lt;5mm. It features a position recognition system and HU equivalents and a indexing system for RT planning</p> <p>In addition the optional Trauma table top allows for the connection to the clinical patient transportation shuttle and eliminates the need for unnecessary patient re-positioning. This trauma table top offers a high capacity patient</p>

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Part No. / Product	Description
<p>(Continued) 14419013 Multi Purpose Table Flash</p>	<p>weight limit to support up to 307 kg/676 lbs of patient weight. Its flat surface allows for easy positioning and transfer from and to the table. Special accessories and table width of 530mm for obese patients ensure a safe and comfortable positioning. It includes a wide range of positioning aids, including a tiltable head holder.</p>
<p>14410506 HeartView Flash</p>	<p>The option supports ultra-fast FlashSpiral scanning for maximum dose saving and scan times down to a quarter heart beat. ECG-synchronized Flash Cardio Sequence for dose efficient but versatile low dose cardiac imaging, including high heart rates and functional evaluation. CT images of the heart are acquired in defined phases of the cardiac cycle by prospective ECG-triggered sequence scanning and retrospective ECG-gated spiral scanning. The ECG signal used for gating the CT images is acquired by an integrated ECG device. The ECG signal is displayed on the gantry front cover and the scan interface. Dual Source acquisition mode with single segment reconstruction enables heart-rate independent temporal resolution of 75 ms (factor 2 higher than single source acquisition with same parameter). Down to 32.5 ms temporal resolution combining HeartView Flash acquisition with robust 2-segment reconstruction. With prospective ECG-triggered scanning, quick scans are triggered by ECG signals. The revolutionary FlashSpiral Cardio mode collects data projections of the entire heart in ultrafast 250 ms within a single diastolic phase. This performance is a direct result of having 2 X-ray tubes, simultaneously collecting information, combined with unprecedented table feeds above 400 mm/s. All the while a true temporal resolution of 75 ms is applied for each individual image. The Flash Cardio Sequence mode introduces the Siemens-only dual-step pulsing, that maintains a low dose level during the systolic phase to calculate ejection fraction in addition to coronary imaging, therefore combining low dose coronary imaging with functional information,  Retrospective gating is based on a continuous spiral scan with simultaneous ECG recording. The cardio spiral reconstruction allows volume imaging in selectable phases of the cardiac cycle. With retrospective ECG-gated spiral scans the ECG signal can be edited for improved image quality in the case of severe arrhythmia. A dedicated "Preview" tool enables the planning of the volume reconstruction during an optimal cardiac phase on the basis of axial single slices. Adaptive ECG-synchronized dose modulation (pulsing) allowing for optimal dose savings of up to 50% compared to single source CT scanners, with advanced irregular and ectopic heartbeat detection algorithm. The 4% MinDose algorithm lets the user save even more dose on the patient examination for dedicated coronary analysis. A special algorithm allows to decrease dose during ECG-Pulsing to 4% of the full tube output, thus decreasing dose about an additional 25%. Data evaluation is only possible in the full dose frame.</p>
<p>14410479 syngo Volume Perfusion CT Neuro#AWP</p>	<ul style="list-style-type: none"> <li>- Reliable assessment of the type and extent of cerebral perfusion disturbances.</li> <li>- Simple and easy workflow with automatic reference vessel and automatic midline identification.</li> <li>- New: Auto-Stroke Functionality for automated display of all perfusion parameters within seconds</li> <li>- 3D analysis of all perfusion data</li> <li>- New automated guided workflow with automatic quantification of Cerebral Blood Flow (CBF), Cerebral Blood Volume (CBV), Time To Peak (TTP) and Mean Transit Time (MTT) parameters.</li> <li>- Integrated automated 3 dimensional assessment of infarcted tissue and tissue at risk.</li> <li>- Overview of all perfusion parameters in one window set (CBF, CBV, MTT, TTP)</li> <li>- Integrated automated motion correction enhance the ability of data evaluation in uncooperative patients</li> </ul> <p><b>Brain Tumor Evaluation</b></p> <p>Fully automated <i>syngo</i> Volume Perfusion CT facilitates quantitative 3D evaluation of brain tumors.</p> <ul style="list-style-type: none"> <li>- Visualization and evaluation of vascular leakage in 3 D</li> <li>- Dedicated 3D blood-brain-barrier imaging</li> <li>- Enhance the ability to grade tumors</li> <li>- Plan biopsies and monitor therapy</li> </ul>
<p>14420838 syngo CT.3D Workplace #CTWP</p>	<p><i>syngo</i> CT Workplace The <i>syngo</i> CT Workplace is a dedicated CT processing workplace that provides instant access to image and scan data via a shared database with the <i>syngo</i> Acquisition Workplace.</p> <p>The <i>syngo</i> CT workplace comes with the following standard features:</p> <ul style="list-style-type: none"> <li>- <i>syngo</i> software platform</li> </ul>

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Part No. / Product	Description
<p>(Continued)            14420838            syngo CT.3D            Workplace #CTWP</p>	<ul style="list-style-type: none"> <li>- syngo 3D Basic               <ul style="list-style-type: none"> <li>- Basic 3D Viewer platform for display of 3D series with multiplanar reconstruction (MPR), surface shaded display (SSD), and maximum intensity projection (MIP).</li> <li>- Offers dual monitor support (a second monitor is optional and must be purchased separately)</li> </ul> </li> <li>- syngo VRT               <ul style="list-style-type: none"> <li>- Direct Volume Rendering Technique (VRT) for viewing 3D-volumes</li> <li>- Projection of volume information onto arbitrarily oriented planes. For each projection ray the density, opacity, and refraction of the penetrated volume is evaluated and the resulting intensity/color is recorded.</li> <li>- Independent control of color, opacity and shading of up to 4 tissue classes.</li> <li>- Predefined VRT settings can be selected via an image gallery.</li> <li>- Facilitates automated bone removal</li> <li>- 3D VRT</li> </ul> </li> <li>- Workstream 4D with 3D Recon -               <ul style="list-style-type: none"> <li>- Acceleration of workflows by direct planning and reconstruction of diagnostic MPR / MIP images</li> <li>- Drastic reduction of the amount of data, since only data relevant for diagnosis are stored</li> <li>- Double-oblique planes for easy planning in the case of complex anatomic structures</li> <li>- Programming of standard projections</li> <li>- Maximum flexibility, since the CT system remains fully functional during image reconstruction</li> <li>- Up to 24 multiphase reconstructions can be initiated in parallel.</li> </ul> </li> </ul> <p>HW Configuration:</p> <ul style="list-style-type: none"> <li>- High-performance computer: Standard Xeon E5540 Quad Core HT 2.53GHz processor</li> <li>- Graphics accelerator: Enhanced Graphics Accelerator</li> <li>- Standard monitor: Flat screen 19" (48 cm) monitor with 1,280 x 1,024 resolution, 1,024 x 1,024 image display matrix and 0.29 mm pixel size.</li> <li>- Optional second monitor with dual display functionality (optional plug-in for syngo 3D) flat screen monitor 19" (48 cm) enables splitting of the syngo task cards onto two monitors.</li> <li>- Standard RAM storage: 12 GB</li> <li>- Image storage Shared database with syngo Acquisition Workplace</li> <li>- Additional storage: CD/DVD Recorder</li> <li>- DICOM viewer: Included on each CD; automatically started on the viewer's PC.</li> <li>-</li> </ul>
<p>14430821            SAFIRE #CTWP</p>	<p>Dose reduction with CT has been limited by the currently used filtered back projection (FBP) reconstruction algorithm. When using this conventional reconstruction of acquired raw data into image data, a trade-off between spatial resolution and image noise has to be considered. Higher spatial resolution increases the ability to see the smallest detail; however, it is directly correlated with increased image noise in standard filtered back projection reconstructions as they are used in CT scanners today.</p> <p>Iterative reconstruction approaches allow decoupling of spatial resolution and image noise. With the Sinogram Affirmed Iterative Reconstruction (SAFIRE), correction loops are introduced into the image generation process. These iteration loops utilize raw-data information to significantly improve image quality. Additionally, image noise is removed in the iterative corrections without degrading image sharpness. The noise texture of the images is comparable to standard well-established convolution kernels. The new technique results in a significantly higher image quality with reduced noise and increased image sharpness that can be translated to dose savings of up to 60%* for a wide range of clinical applications.</p> <p>*In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. The following test method was used to determine a 54 to 60% dose reduction when using the SAFIRE reconstruction software. Noise, CT numbers, homogeneity, low-contrast resolution and high contrast resolution were assessed in a Gammex 438 phantom. Low dose data reconstructed with SAFIRE showed the same image quality compared to full dose data based on this test. Data on file.</p>

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Part No. / Product	Description
14420911 FAST Spine #CTWP	<p>FAST Spine provides various modes that automatically create anatomically orientated spine reconstructions based on a 3D volume. It provides an easier, faster and standardized workflow in CT scanning. FAST Spine features automatic segmentation of the spinal canal, automatic labeling of the vertebrae, anatomically oriented slices – (orthogonal to the spinal canal), coronal and sagittal reconstructions which refer to the curvature of the spinal column and more. All modes offer the possibility to adapt the results manually.</p> <p>FAST Spine requires Workstream 4D.</p>
14420997 FAST Planning #CTWP	<p>FAST Planning assists the scan and reconstruction planning, based on a topogram, to provide an easier, faster and standardized workflow in CT scanning. FAST Planning features the selection of the anatomical region of interest from a list prospectively defined scan and reconstruction ranges, automatic detection of the scan region(s) of interest and proposal of corresponding scan range(s) in the topogram (in a narrow or wide lateral FOV), optimized FOV and automatic iso-center adaptation for Head scans.</p>
14428558 CARE Profile #CTWP	<p>From the patient's point of view, however, it is not enough just to improve the processes - administering the lowest possible dose is just as important. In CT, a great deal of importance is rightly attached to the Alara principle (Alara = As Low As Reasonably Achievable). Along with its FAST applications, Siemens CT delivers a comprehensive range of new CARE applications for dose reduction. These include, for example, automatic display of the dose distribution for the planned examination using CARE Profile.</p>
14414501 syngo Dual Energy #CTWP	<p>The <i>syngo</i> Dual Energy option offers a viewer that displays a fused image for initial diagnosis. It includes Optimum Contrast to calculate automatically contrast-optimized images as well as the possibility to calculate monoenergetic images for a range of 40 – 190 kV. The additional, optional Dual Energy applications utilize <i>syngo</i> Dual Energy's two data sets even further: the material-specific difference in attenuation enables an easy classification of the elementary chemical composition of the scanned tissue.</p>
14414703 syngo Dual Energy Advanced #CTWP	<p>Based on two spiral data sets acquired in a single scan utilizing the <i>syngo</i> Dual Energy option, <i>syngo</i> Dual Energy Advanced offers the following Dual Energy applications:</p> <ul style="list-style-type: none"> <li>- <i>syngo</i> DE Direct Angio accurately highlights bone structures on CT angiography (CTA) datasets. The highlighted pixels can be removed by a single click, e.g. subtract bone in CTA's. Overcoming limitations of conventional bone removal software, the Dual Energy approach reliably isolates even complex vasculature, for example, at the base of the skull where CTA's are difficult to interpret.</li> <li>- <i>syngo</i> DE Virtual Unenhanced generates a unenhanced liver or kidney image, from an enhanced Dual Energy image without additional scans by subtracting the contrast medium out of enhanced CT dataset. The resulting image helps, to characterize liver and kidney lesions.</li> <li>- <i>syngo</i> DE Lung Perfusion enables a fast evaluation of lung perfusion defects without use of an additional non-contrast scan. It directly visualizes the local iodine concentration in the lung parenchyma, which is a measure of the local blood volume, thus enabling a display of the area of possibly affected tissue.</li> <li>- <i>syngo</i> DE Musculoskeletal offers the enhanced visualization of tendons and ligaments in a CT image.</li> <li>- <i>syngo</i> DE Calculi Characterization characterizes kidney stones.</li> <li>- <i>syngo</i> DE Hardplaque Display enables the identification and automatic removal of calcifications from a CTA image. By therefore differentiating between hard plaques and contrast agent this Dual Energy application helps to display of true vessel lumen without interfering hard plaques.</li> <li>- <i>syngo</i> DE Heart PBV offers the visualization of contrast agent concentration in the myocardium. An optional heart isolation is provided.</li> <li>- <i>syngo</i> DE Brain Hemorrhage allows to differentiate older bleedings which are visible in the virtual non-contrast image from new bleedings, which are the only ones that remain visible in the iodine image.</li> <li>- <i>syngo</i> DE Lung Vessels allows to colour-code vessels that are affected e.g. by pulmonary emboli and</li> </ul>

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Part No. / Product	Description
<p>(Continued)            14414703            syngo Dual Energy            Advanced #CTWP</p>	<p>therefore show a significantly lower iodine concentration than non-affected vessels. Due to the colour-coding the affected vessels are easier to identify.</p> <ul style="list-style-type: none"> <li>- syngo DE Gout can visualize depositions of uric acid crystals (tophi) in peripheral extremities by automatically colour-coding these uric acid crystals.</li> <li>- syngo DE Xenon allows to visualize Xenon concentration in lung without use of an additional non contrast scan. The results are shown as color overlay to anatomical, grayscale information. The syngo Dual Energy Xenon algorithms are derived from the syngo Dual Energy Virtual Unenhanced algorithms.</li> <li>- syngo DE Lung Nodules allows to visualize the contrast agent concentration in lung nodules without use of an additional non contrast scan. Contrast agent concentration is shown as color overlay to anatomical, grayscale information. A semi-automatic segmentation and evaluation of the lung nodule size and enhancement is possible. Nodule segmentation is equivalent to syngo CT Oncology.</li> </ul>
<p>M2SCT222LDF            Stellant Dual Flow CT            Inj.(Ceiling-long)</p>	<p>Stellant D Dual Head / Dual Flow injector – ceiling/long mounted. The Stellant D CT injector is a dual syringe injection system that enables clinicians to perform the most critical CT contrast exams, including cardiac CT and coronary CTA. Medrad's DualFlow technology gives the user the ability to inject both contrast and saline at the same time.</p> <ul style="list-style-type: none"> <li>- Real-time display of injection pressure in graph form.</li> <li>- Snap-on / twist-off syringe design.</li> <li>- Automatic plunger advance and retract when attaching and detaching syringes.</li> <li>- Automatic filling and priming with the touch of a button.</li> <li>- Stores and recalls up to 32 protocols.</li> <li>- Multi-phase programming (and patented Hold/Pause feature)</li> <li>- Programmable pressure limit</li> <li>- Ceiling Mount length (28'-46' / 75 cm-117cm)</li> </ul> <p>Installation, applications and one year warranty provided by Medrad.</p> <p>This product has been tested and verified for compatibility with the following Siemens' products: SOMATOM Definition, Sensation, Emotion and Spirit. Compatibility with other products cannot be guaranteed and used w/any other products may void service contracts and/or system warranties.</p> <p>Additional Options Available:            M2SCTXDS700C - MEDRAD XDS™ extravasation detector – Ceiling            M2SCTUFKP3TC - MEDRAD P3T Cardiac</p>

Project Name: CT REPLACEMENT AT RALEIGH CAMPUS  
 Provider/Company: WAKEMED

**PROPOSED TOTAL CAPITAL COST OF PROJECT**

	Total
<b>A. Site Costs</b>	
(1) Full purchase price of land Acres _____ Price per Acre _____	\$ _____ 0
(2) Closing costs	\$ _____ 0
(3) Site Inspection and Survey	\$ _____ 0
(4) Legal fees and subsoil investigation	\$ _____ 0
(5) Site Preparation Costs [Include]:	
Soil Borings	\$ _____
Clearing and Grading	\$ _____
Roads and Parking	\$ _____
Sidewalks	\$ _____
Water and Sewer	\$ _____
Excavation and Backfill	\$ _____
Termite Treatment	\$ _____
<b>Sub-Total Site Preparation Costs</b>	\$ _____ 0
(6) Other (Specify)	\$ _____ 0
(7) <b>Sub-Total Site Costs</b>	\$ _____ 0
<b>B. Construction Contract</b>	
(8) Cost of Materials [Include]:	
General Requirements	\$ _____
Concrete/Masonry	\$ _____
Woods/Doors & Windows/Finishes	\$ _____
Thermal & Moisture Protection	\$ _____
Equipment/Specialty Items	\$ _____
Mechanical/Electrical	\$ _____
<b>Sub-Total Cost of Materials</b>	\$ _____ 263,030
(9) Cost of Labor	\$ _____ 321,480
(10) Other (Construction Contingency)	\$ _____ 58,451
(11) <b>Sub-Total Construction Contract</b>	\$ _____ 642,961
<b>C. Miscellaneous Project Costs</b>	
(12) Building Purchase	\$ _____ 0
(13) Fixed Equipment Purchase/Lease	\$ _____ 1,659,513
(14) Movable Equipment Purchase/Lease	\$ _____ 22,706
(15) Furniture	\$ _____ 7,500
(16) Information Services	\$ _____ 30,000
(17) Consultant Fees	
Architect and Engineering Fees	\$ _____ 73,064
Legal Fees	\$ _____ 0
Market Analysis	\$ _____ 0
Other (Project testing, permitting, etc.)	\$ _____ 20,000
<b>Total Consultant Fees</b>	\$ _____ 93,064
(18) Financing Costs (e.g. Bond, Loan, etc.)	\$ _____ 0
(19) Interest During Construction	\$ _____ 0
(20) Other (Specify)	\$ _____ 0
(21) <b>Sub-Total Miscellaneous</b>	\$ _____ 1,812,783
(22) <b>Total Capital Cost of Project (Sum A-C above)</b>	\$ _____ <u>2,455,744</u>

November 21, 2013

WakeMed, Raleigh Hospital  
CT 3 Replacement  
Project No. P1050.00

P.O. Box 12697  
Research Triangle Park  
North Carolina 27708

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[www.bbh-design.com](http://www.bbh-design.com)

**Cost Certification**

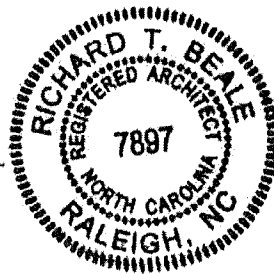
This is to certify that I have reviewed the Construction Costs for the referenced project. Based on my review and comparison of this project with similar projects, I believe the costs indicated are a reasonable estimate of the costs to be expected on a project of the scope defined. The *Anticipated Construction Cost* of \$642,961 combined with the associated *Soft Costs* of \$1,812,783 create a **Total Project Budget for the WakeMed Raleigh Hospital CT3 replacement at Raleigh Campus of \$2,445,744.**

BBH Design, PA is willing to develop the drawings for this project under Contract with WakeMed.

BBH-Design, PA.



Richard Beale, AIA, ACHA  
Partner

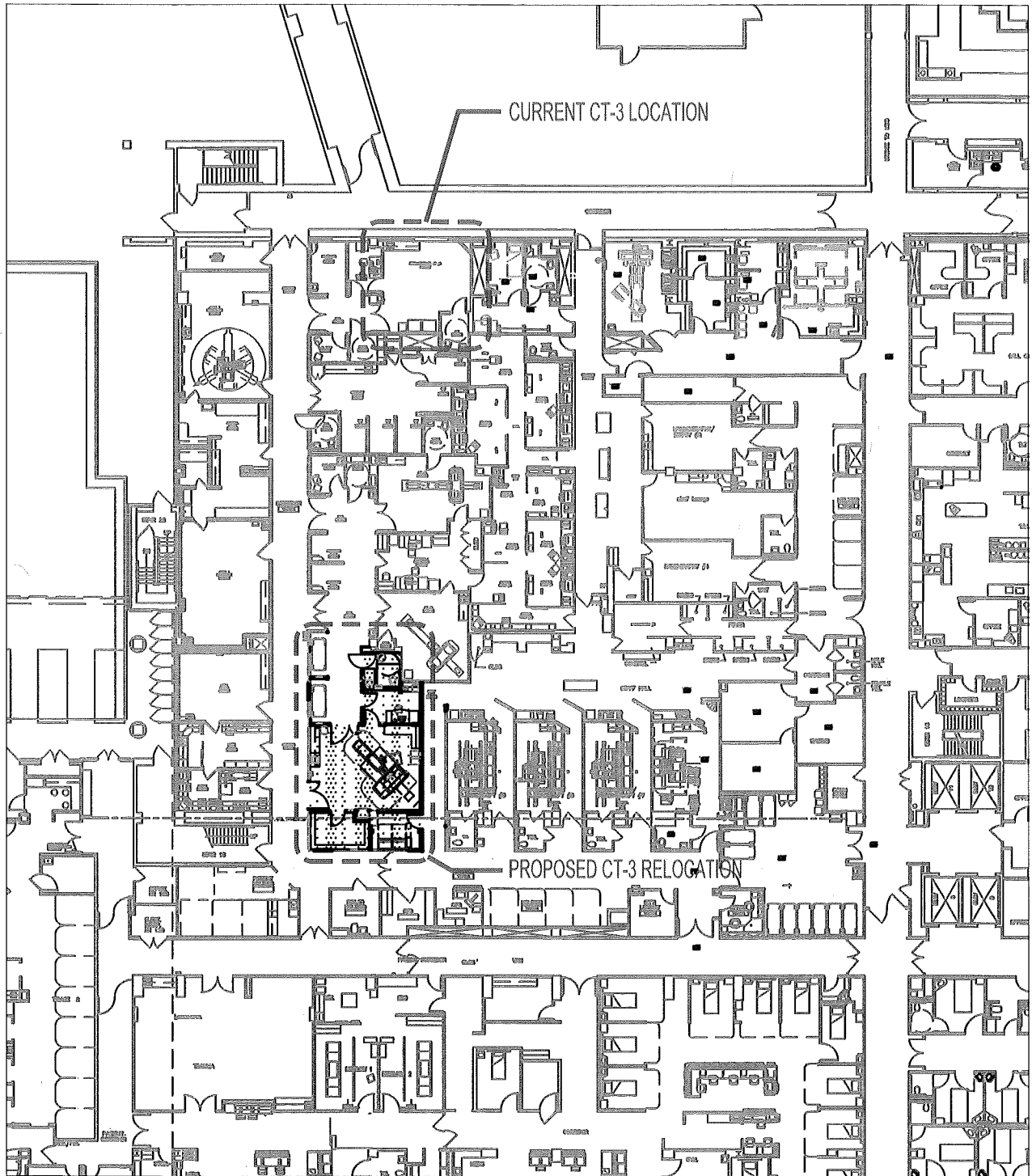


\_\_\_\_ November 21, 2013 \_\_\_\_\_  
Date

## EQUIPMENT COMPARISON

	EXISTING EQUIPMENT	REPLACEMENT EQUIPMENT
Type of Equipment (List Each Component)	CT Scanner	CT Scanner
Manufacturer of Equipment	Philips Healthcare	Siemens Medical Solutions
Tesla Rating for MRIs	N/A	N/A
Model Number	Brilliance 16 16-slice	SOMATOM Definition Flash 128-slice
Serial Number	3340	TBD
Provider's Method of Identifying Equipment	Capital asset control number	Capital asset control number
Specify if Mobile or Fixed	Fixed	Fixed
Mobile Trailer Serial Number/VIN #	N/A	N/A
Mobile Tractor Serial Number/VIN #	N/A	N/A
Date of Acquisition of Each Component	12/15/2003	January 2014
Does Provider Hold Title to Equipment or Have a Capital Lease?	Title	Title
Specify if Equipment Was/Is New or Used When Acquired	New	New
Total Capital Cost of Project (Including Construction, etc.) <Use Attached Form>	N/A	\$2,445,744
Total Cost of Equipment	\$942,242	\$1,659,513
Fair Market Value of Equipment	\$45,000	\$1,659,513
Net Purchase Price of Equipment	N/A	\$1,659,513
Locations Where Operated	WakeMed Raleigh Campus	WakeMed Raleigh Campus
Number Days In Use/To be Used in N.C. Per Year	365	365
Percent of Change in Patient Charges (by Procedure)	N/A	0%
Percent of Change in Per Procedure Operating Expenses (by Procedure)	N/A	0%
Type of Procedures Currently Performed on Existing Equipment	Diagnostic CT imaging	N/A
Type of Procedures New Equipment is Capable of Performing	N/A	Diagnostic CT imaging





DEPARTMENTAL LOCATION PLAN - FIRST FLOOR IMAGING

DATE: 11.25.2013

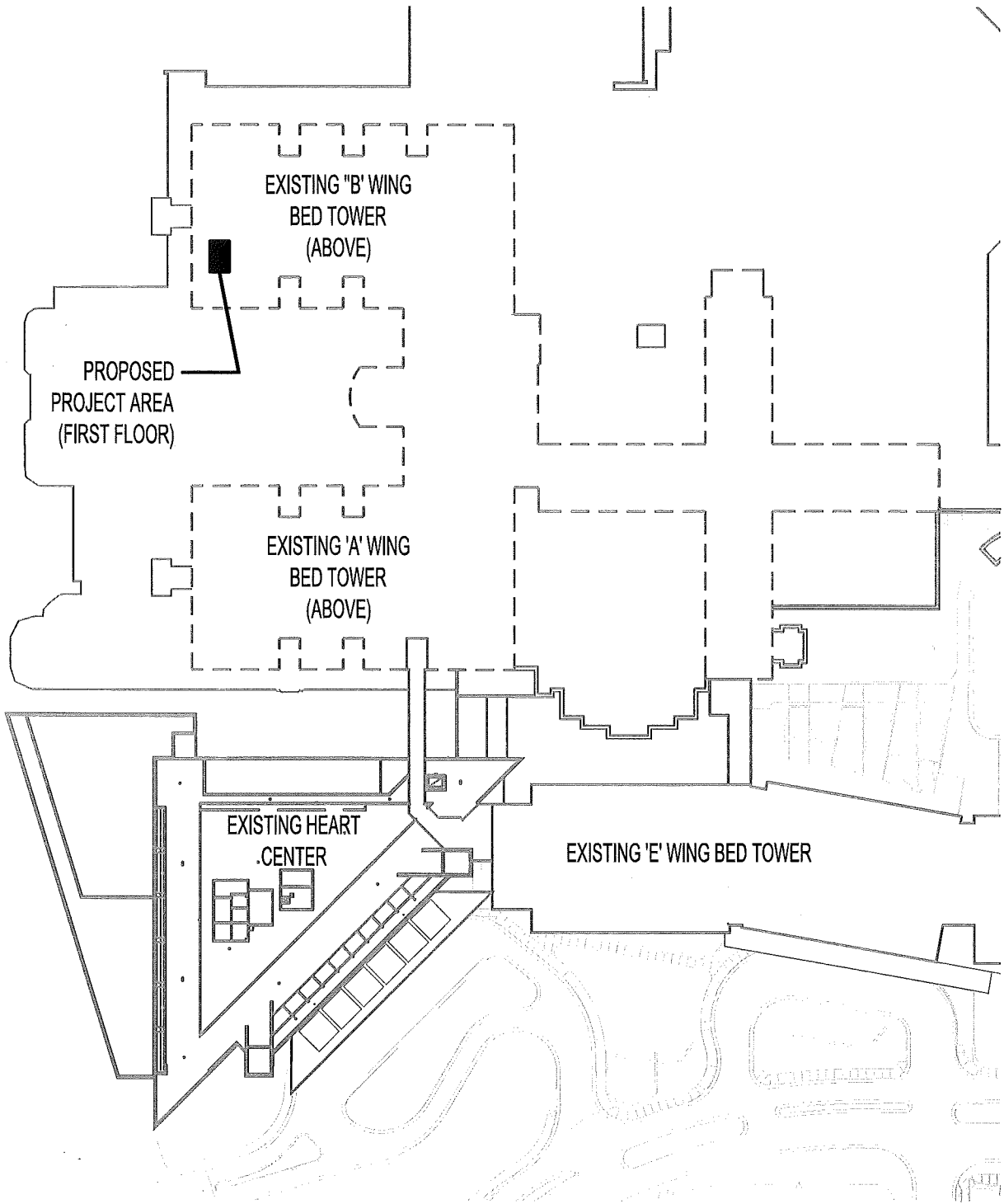
SCALE: 1/32" = 1'-0"



CT-3 RELOCATION  
RALEIGH, NC



PO BOX 12697, RTP, NC 27709  
T: 919.460.6700 F: 919.460.6733  
[www.bbh-design.com](http://www.bbh-design.com)



SITE PLAN

DATE: 11.25.2013

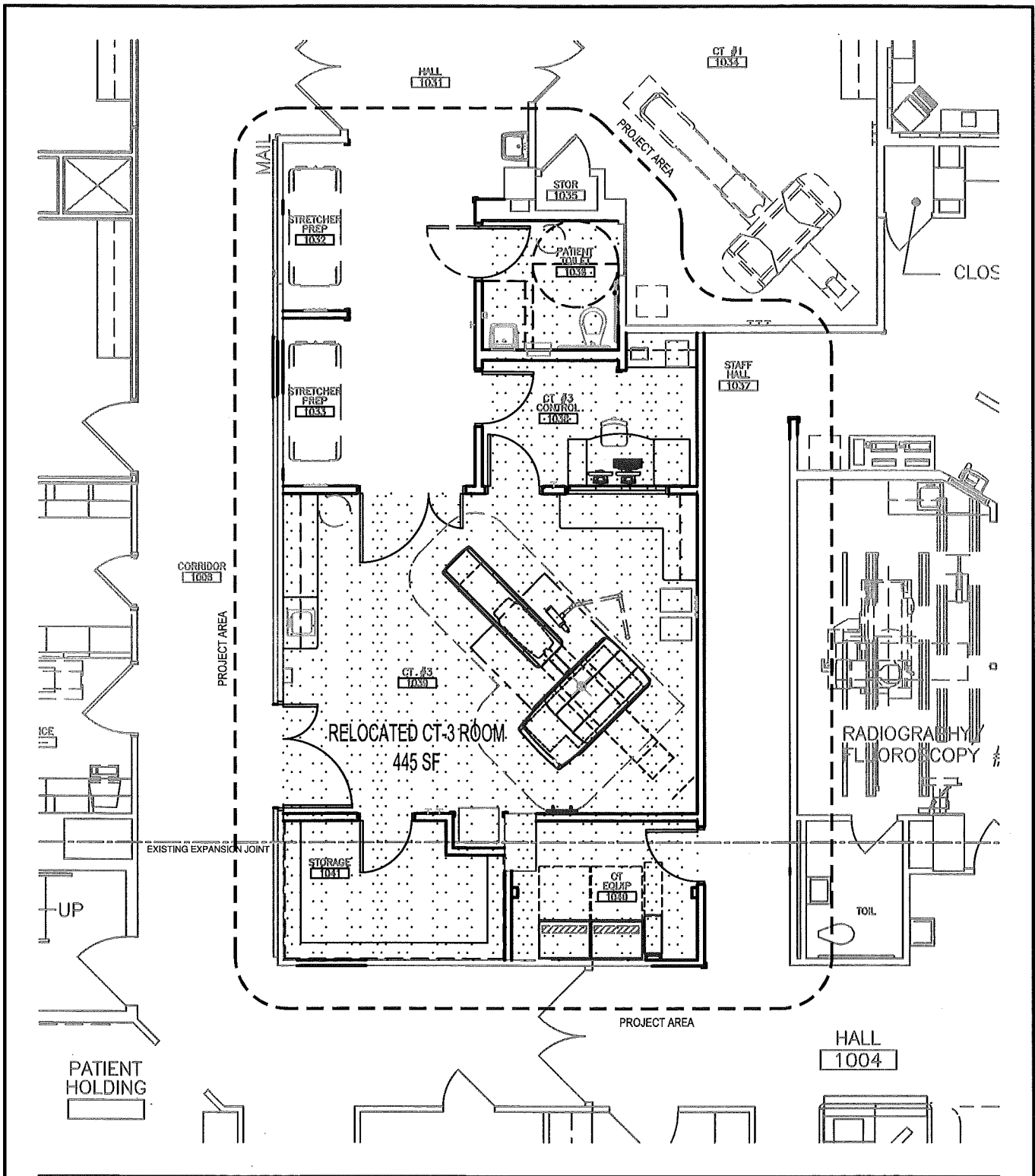
SCALE: 1" = 100'-0"



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PROPOSED FLOOR PLAN

DATE: 11.25.2013

SCALE: 1/8" = 1'-0"



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