



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

October 31, 2014

Kenneth W. Wood
Sentara Albemarle Medical Center
1144 N. Road Street
Elizabeth City, NC 27909

Exempt from Review - Replacement Equipment

Facility: Sentara Kitty Hawk Advanced Imaging
Project Description: Replacement of mobile MRI scanner
County: Dare
FID #: 001332

Dear Mr. Wood:

In response to your letter of October 13, 2014, the above referenced proposal is exempt from certificate of need review in accordance with N.C.G.S 131E-184(a)(7). Therefore, you may proceed to acquire, without a certificate of need, the Siemens Magnetom Espree mobile MRI scanner to replace the existing GE Signa L1001PB mobile MRI scanner, to operate at Sentara Kitty Hawk Advanced Imaging Center, Spring Arbor Assisted Living and Sentara Albemarle Medical Center. 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.

Moreover, you need to contact the Construction and Acute Care Licensure and Certification Section, Division of Health Service Regulation 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,

Bernetta Thorne-Williams
Project Analyst

Martha J. Frisone, Interim Chief
Certificate of Need Section

cc: Medical Facilities Planning Branch, DHSR
Construction Section, DHSR
Acute Care Licensure and Certification 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

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FID# 001332 6



Received by
the CON Section
OCT 17 2014

Sentara Albemarle Medical Center
1144 N. Road Street
Elizabeth City, NC 27909

Phone: 252.335.0531
www.albemarlehealth.org

October 13, 2014

Ms. Martha Frisone, Interim Chief
North Carolina Department of Health and Human Services
Division of Health Service Regulation
Certificate of Need Section
809 Ruggles Drive
Raleigh, NC 27603

RE: Notice of Replacement Mobile MRI Equipment – Sentara Kitty Hawk Advanced Imaging Center Exemption from Review

Dear Ms. Frisone:

Sentara Kitty Hawk, in accordance with N.C. General Statute 131E-184(a)(7), is writing to notify the Certificate of Need (CON) Section of its intention to replace an existing mobile MRI unit. The existing mobile MRI scanner, CON Project Identification Number R-6293-00, issued January 11, 2002, is a GE Signa L1001PB 1.5T unit, housed in a mobile coach. Sentara Kitty Hawk is seeking to replace its existing mobile MRI unit with a Siemens Magnetom Espree 1.5T unit with a mobile coach.

The original Certificate was issued to Regional Medical Services, a division of Albemarle Hospital. On November 26, 2013, Sentara Albemarle Medical Center notified the CON Section of Sentara Healthcare's acquisition of the mobile MRI unit. Confirmation of exemption from Certificate of Need review was sent by the North Carolina Division of Health Service Regulation on December 23, 2013.

The existing unit was installed in 2002 and received the last software upgrade in 2010. No further upgrades are available. Image quality and the length of studies have fallen below expectations. The system is experiencing persistent mechanical problems resulting in lengthy downtimes due to availability of parts.

The equipment is currently in operation, as it has been since it was acquired. Please refer to annual Registration and Inventory of Medical Equipment reports on file at the Medical Facilities Planning Branch.

There will be no increase in either the fixed or mobile MRI inventories as a result of this replacement request. There is no construction cost related to this project. The cost for the MRI unit mobile coach is \$1,427,340.

Ms. Martha Frisone, Interim Chief
North Carolina Department of Health and Human Services
October 13, 2014
Page Two

Equipment	Vendor	Cost	Total Cost
MAGNETOM Espree	Siemens		\$1,427,340
Coach	Siemens	Included with unit	
Total			\$1,427,340

"Replacement Equipment" as defined in N.C. General Statute 131E-176(22a) is met by this project:

1. The cost of the replacement unit and coach and other activities essential to acquiring the unit and making it operational is less than \$2 million; and
2. The sole purpose is to replace comparable medical equipment currently in use, which will be traded in.

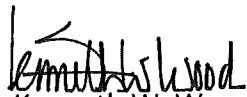
As defined in 10A NCAC 14C.0303(d), this replacement equipment is comparable to the equipment being replaced:

1. Both units are 1.5T MRI equipment, although the new unit may possess expanded capabilities due to technological improvements; and
2. The replacement unit is functionally similar and is used for the same diagnostic purposes as the unit currently in use and will not be used to provide a new health service; and
3. The acquisition will not result in an increase in patient charges within the first twelve months after acquisition.

The conditions of 10A NCAC 14C.0303(e) do not apply to this project.

Based on the above, Sentara Kitty Hawk requests that the CON Section confirm in writing that the above proposal is exempt from CON review.

Sincerely,



Kenneth W. Wood, FACHE
Interim President

**EXHIBIT A
EQUIPMENT COMPARISON
SENTARA KITTY HAWK MOBILE MRI REPLACEMENT**

	Existing Equipment	Replacement Equipment
Type of Equipment	MRI Scanner	MRI Scanner
Manufacturer of Equipment	GE	Siemens
Tesla Rating	1.5T	1.5T
Model	Signa L1001	MAGNETOM Espree
Serial Number	159FA482X31182588	TBD
Internal Method of Identifying Unit	MRI Unit	MRI Unit
Mobile or Fixed	Mobile	Mobile
Mobile Trailer Serial Number/VIN	1S9FA482X31182588	TBD
Mobile Tractor Serial Number/VIN	1HSHCATRXTH213352	TBD
Date of Acquisition	2002	2014
Title or Lease	Title	Title
New or Used	New	New
Total Capital Cost of Project	\$1,588,986	\$1,427,340
Total Cost of Equipment	\$1,588,986	\$1,427,340
Fair Market Value of Equipment	\$1,588,986	\$1,427,340
Net Purchase Price of Equipment	\$1,588,986	\$1,427,340
Locations Where Operated	Sentara Kitty Hawk Advanced Imaging Center and Spring Arbor Assisted Living	Sentara Kitty Hawk Advanced Imaging Center, Spring Arbor Assisted Living, and Sentara Albemarle Medical Center
Number Days In Use/To Be Used	365	365
Percent Change in Patient Charges	0%	0%
Type of Procedures Currently Performed on Existing Equipment and New Equipment	MRI	MRI

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

SIEMENS REPRESENTATIVE
Karen Dixon - (865) 360-8644

PRELIMINARY PROPOSAL

Customer Number: 0000009418

Date: 8/19/2014

SENTARA KITTY HAWK
5200 NORTH CROATAN HIGHWAY
KITTY HAWK, NC 27949

Quote Nr: 1-5SJEVD Rev. 0

MAGNETOM Espree eco

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

Qty	Part No.	Item Description
1	14445525	RS Mobile Configurator #Es This Mobile Configurator option contains the dedicated components for installation of a MAGNETOM Espree, the first Open Bore MRI, in the mobile environment. It includes: - Cover Zebra - Standard Matrix Table - Mobile Kit For a mobile MAGNETOM Espree system the following options are mandatory: Separator (SEP), Cable Set syngo 11/9 (additional mandatory items may be required, please check with the Mobile Product Manager for your country).
1	14413755	RS MAGNETOM Espree - System The Siemens 1.5T MAGNETOM Espree, a Tim system, is the first Open Bore MR scanner. It uniquely supports revolutionary patient care through: - Revolutionary, CT-like bore design 70 cm patient diameter, 125 cm long system (cover to cover) for head out of the magnet in 60% of the anatomy scanned. - Tim (Total imaging matrix) technology, the tremendous innovative RF system and matrix coil technology, which provides up to 100% more SNR, streamlines positioning and opens the door to whole body imaging. - syngo(r), the Siemens unique multi modality software providing innovative applications and workflow automation features. The system including magnet, electronics and control room can be installed in 30 sqm (325 sq. ft). The basic system includes: - Unique ultra-short 120 cm long, whole-body superconductive 1.5T magnet with Zero Helium Boil-Off technology - Siemens exclusive Actively Shielded water-cooled gradient system - Digital RF Transmit and Receive System - RF Coils (Head, Neck, Spine and Body Matrix Coil, 4-channel Flex Coils large/ small) - Wireless physiological measuring unit (PMU) - High performance host computer and image processor - syngo(r) MR SW incl. Inline technology, 1D/2D PACE, iPAT, iPAT Extensions, syngo BLADE, CISS/DESS and Phoenix - Tim Application Suite including nine dedicated Suites: Neuro Suite, Angio Suite, Cardiac Suite, Body Suite, Onco Suite, Breast Suite, Ortho Suite, Pediatric Suite and Scientific Suite. For system cooling either the predefined chiller option or the Separator is required.
1	14434766	RS ecoline MR System Delivery Siemens ecoline systems have already been in use and are equipped with current software and hardware versions via Siemens Refurbished Systems based on stringent quality standards. In terms of their appearance, functionality, safety and reliability, they are comparable to a new system. Therefore the warranty for ecoline systems is 12 month provided like new systems. Important note: This offer is non-binding, subject to prior sale to other interested parties.

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Qty	Part No.	Item Description
1	14419729	RS Sustainable Impact MR ecoline The Proven Excellence Sustainable Impact program tracks integrated environmental protection throughout the product's entire lifecycle. Siemens Healthcare's five-stage Proven Excellence quality processes reduce CO2 emissions by approximately 20,000 tons per year. This reduction is equivalent to the CO2 absorbance of around 32 hectares of tropical rain forest. The Proven Excellence Sustainable Impact program is an initiative to reforest 32 hectares of rain forest to double the reduction of CO2 emissions to 40,000 tons. For every ecoline system purchased, Siemens Healthcare will plant trees in the Sebangau National Park in cooperation with WWF Indonesia and its "New Trees" replanting initiative. Proven Excellence Sustainable Impact program start-up package consists of the following: - Proven Excellence Sustainable Impact acrylic glass including medal inlay with the customer's individual system data for wall mounting. - Proven Excellence Sustainable Impact program information - Reforestation certification from WWF Indonesia
1	14418041	RS T-class #Tim T-class is the next generation of trendsetting Tim-based MRI scanners. The new T-class systems enable for the first time in MRI, Continuous Table move examinations, syngo TimCT. syngo TimCT The trendsetting application syngo TimCT with Continuous Table move powered by Tim, enables MR to evolve from stepping to continuous table movement during the scan. T-class systems come standard with the Continuous Table move localizer, syngo TimCT FastView for fast and efficient localizing of large or localized body regions. Tim Workflow Suite The Tim Workflow Suite includes a set of tools that provide a versatile workflow solution at the scanner, e.g. for MR measurement and processing. In addition, the Tim Workflow Suite includes Inline Diffusion for automated ADC mapping and REVEAL - body diffusion imaging. Tim Whole Body Suite Featuring the Tim Whole Body Suite T-class enables head-to-toe imaging without compromise. T-class delivers the full extended range of the unique telescopic patient table drive for a total FoV of up to 205 cm (6' 9") (system dependant) with full local coil image quality. In addition the T-class package also includes all l-class standard components: - 3D Distortion Correction - MPPS - ImageFilter SW - PhoenixZIP - DICOM Study Split
1	14413841	RS Tim [76x18] Z-engine #Es Tim [76x18] Z-engine performance level Tim [76x18] is Total imaging matrix with 76 seamlessly integrated coil elements, combinable to 18 RF channels. It is for demanding high-end applications and optimized throughput. Tim [76x18] has flexibility in Parallel Imaging. PAT factors up to 4 (one direction) or 12 (in two directions, optional) help speed acquisitions. Maximum SNR is ensured through the new matrix coil technology. Z-engine Gradient System The Z-engine is designed combining high performance while minimizing acoustic noise.
1	14413789	RS PC Keyboard US english # Tim Standard PC keyboard with 101 keys.
1	14413831	RS Cover #Espree Cover color and design are subject to availability.
1	14413844	RS Standard Patient Matrix Table #Es The patient table is mounted directly to the magnet assembly. The table can support up to 250 kg (550 lbs) patients with unrestricted vertical and horizontal movement.
1	14413887	RS TWIST syngo #Tim This package contains a Siemens unique sequence and protocols for time-resolved 3D MR angiographic imaging with high spatial and temporal resolution. TWIST supports comprehensive dynamic MR angio exams. TWIST offers temporal information of vessel filling in addition to conventional static MR angiography. In case of very high spatial resolution TWIST may even replace conventional static MR angio. Moreover, TWIST does not require any bolus timing - just inject and go.
1	14442519	RS WARP syngo #Tim syngo WARP integrates different techniques tailored to reduce susceptibility artifacts caused by orthopedic MR-conditional metal implants.

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Qty	Part No.	Item Description
1	14413783	<p>RS Body Matrix Coil #Tim</p> <p>The new multi-element Matrix coil technology is an essential part supplementing the most innovative Total imaging matrix. Matrix coils have multiple receive coil elements that can be clustered in groups. Each receive coil element is equipped with a low noise preamplifier to maximize signal-to-noise ratio. The Body Matrix Coil features: - 6-element design with 6 integrated preamplifiers, with 2 clusters of 3 elements each - Operated depending on the Matrix Coil Mode as a 2-channel coil (CP Mode), 4-channel coil (Dual Mode) or 6-channel coil (Triple Mode) - Operates in an integrated fashion with the Spine Matrix coil (2 rings of 6 elements each = 12-element design) - Can be combined with further Body Matrix coils for larger coverage - No coil tuning - iPAT-compatible Applications: - Thorax (incl. heart) - Abdomen - Pelvis - Hip Can be combined with: - Head Matrix coil - Neck Matrix coil - Spine Matrix coil - Additional Body Matrix coils (typically 2-3 in total) for additional anatomical coverage - PA Matrix coil (Peripheral Angio Matrix; optional) - All flexible coils (e.g. CP Flex coil, small, CP Flex coil, large) - CP Head Array coil - Endorectal coils</p>
1	14413878	<p>RS Shoulder Array Coil #Es</p> <p>This iPAT compatible coil for examinations of the left or right shoulder consists of a base plate and two receive array coil attachments available in different sizes, these will be attached and can be relocated on the basis plate.</p>
1	14413794	<p>RS CP Extremity Coil #Tim</p> <p>Circularly Polarized no-tune transmit/receive coil for joint examinations in the region of the lower extremities.</p>
1	14413834	<p>RS Cable Set syngo 8/12 #Es</p> <p>Cable length inside the cabin 8 m, cable length outside the cabin 12 m. Inclusive Ethernet Twisted Pair Adapter and 10 m cable.</p>
1	14413853	<p>RS Venting Kit Sea Freight #Av,Es</p> <p>Overpressure valve as a transport safety device for cold delivery of the magnet by sea (designed for atmospheric pressure conditions at sea level during ocean and land-borne transport).</p>
1	14406340	<p>RS Helium Fill 30/70 #S;Av;Es;TATS</p> <p>Helium Fill for cold delivery ex works.</p>
1	14413807	<p>RS Separator #Av;Es</p> <p>The SEP (Separation cabinet) has to be used if a central hospital chilled water supply is available or if a chiller of any brand/type is already available. In these cases, the primary water specifications must fulfill the requirements (e.g. 60kW heat dissipation; 90l/min flow; 6 to 12°C water temperature; ph value 6 to 8). Dimension: 1800mm x 650mm x 650mm (height x width x depth) Weight: 400kg</p>
1	14413825	<p>RS UPS Cable #Tim</p> <p>Power cable for the UPS-system UPS Powerware PW 9125-3000i (8857810) at the ACC of the MAGNETOM Tim systems for backing up the computer. Standard cable length 9 m.</p>
1	14417559	<p>RS UPS system</p> <p>UPS system Eaton PW9130-3000G-3000T-XLEU for MAGNETOM Tim and MAGNETOM Symphony systems for safeguarding computers. Power output: 3.0 kVA / 2.7 kW Bridge time: 5 min full load / 14 min half load Input voltage: 230 VAC</p>
1	14417560	<p>RS UPS Battery module</p> <p>UPS battery module Eaton PW 9130N-3000T-EBM for all MAGNETOM Tim and MAGNETOM Symphony systems for safeguarding computers. Extension for: PW9130i-3000T Battery type: Closed, maintenance-free Extension of the bridge time to: 24 minutes with a module Dimensions (H x W x D): Battery module: 346 x 214 x 412 mm incl. bracket set Weight: approx. 50 kg</p>
1	M3SSMR300E PM	Spectris Solaris EP Injector-mobile
1	MR_MISC_MA TERIAL	Placeholder for Mobile Trailer \$420,000.00
1	MR_TRADE_IN _ALLOW	MR Trade-in-Allowance
1	PWR9390PC16 0	Powerware Power Conditioner 9390
1	PW9390RELAK IT	RELAY KIT for MOB MR PwCond. 9390

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Qty	Part No.	Item Description
1	PWR9390ISO9 0	Isolation Transformer
1	PWR9390MMO BKIT	Mounting kit f.Pwrwre9390 mobile MR
1	MR_INITIAL_32	Initial onsite training 32 hrs MR_INITIAL_32 Up to (32) hours of on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Training will cover agenda items on the ASRT approved checklist. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	MR_FOLLOWU P_24	Follow-up training 24 hrs Up to (24) hours of follow-up on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	MR_INT_SYNGO BCLS	Basic syngo MR Class MR_INT_SYNGO_BCLS Tuition for (1) imaging professional to attend Classroom Course at Siemens Training Center. The objectives of this class are to introduce the user interface of the common syngo platform and instructions on building protocols, demonstration of software functions, and hands-on sessions. This class includes lunch, economy airfare, and lodging for (1) imaging professional. All arrangements must be arranged through Siemens designated travel agency. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	MR_ADD_24	Additional onsite training 24 hours Up to (24) hours of on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Training will cover agenda items on the ASRT approved checklist if applicable. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	MR_ADD_32	Additional onsite training 32 hours Up to (32) hours of on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Training will cover agenda items on the ASRT approved checklist if applicable. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	MR_CRYO	Standard Cryogenes
1	4MR5142869	Armrest #MR
1	MR_PM	MR Project Management A Siemens Project Manager (PM) will be the single point of contact for the implementation of your Siemens 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.
1	MR_MOB_RIG _INST	MR Mobile Rigging and Installation
1	MR_ADDL_RIG GING	Additional Rigging MR

System Total: \$1,427,340

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PRELIMINARY PROPOSAL

OPTIONS on Quote Nr: 1-5SJEVD Rev. 0

OPTIONS for MAGNETOM Espree eco

All items listed below are OPTIONS and will be included on this system ONLY if initialed:

Qty	Part No.	Item Description	Extended Price
1	14413918	RS NATIVE syngo #Tim This package contains sequences and protocols for non-contrast 3D MR angiographic imaging with high spatial resolution. NATIVE allows imaging especially of abdominal and peripheral vessels and is an alternative to MR angiography techniques with contrast medium, especially for patients with severe renal insufficiency.	+ \$32,500
1	14413869	RS SWI #Tim Susceptibility Weighted Imaging is a high-resolution 3D imaging technique for the brain with ultra-high sensitivity for microscopic magnetic field inhomogeneities caused by deoxygenated blood, products of blood decomposition and microscopic iron deposits. Among other things, the method allows for the highly sensitive proof of cerebral hemorrhages and the high-resolution display of venous cerebral blood vessels.	+ \$16,250
1	14419816	RS 2/4/8-ch Sentinelle BreastCoil #Es The 2-/4-/8-channel Sentinelle Breast Coil consists of a table attachment with exchangeable coils with different numbers of channels as described in detail in the E text. The 2-/4-/8-channel Sentinelle Breast Coil can be used as an 8-channel imaging coil, a 4-channel biopsy coil as well as a 2-channel biopsy coil for medial biopsy access. This coil provides a large biopsy access, which is even larger in combination with the MAGNETOM Espree. The preamplifiers are integrated into the coil. The coil is iPAT-compatible. MAGNETOM Espree is delivered with a base plate for extended biopsy access. This plate replaces the height of the Spine Coil. MAGNETOM Avanto and MAGNETOM Symphony a Tim System are delivered without the base plate.	+ \$127,000
1	14413884	RS 8-channel Foot/ Ankle Coil #Es The 8-channel foot-ankle coil is an iPAT-compatible "no-tune" receiver coil for the examination of the foot and the ankle joint.	+ \$40,950
1	14418035	RS Tx/Rx 15-channel Knee Coil #Tim New 15-channel transmitter/receiver coil for joint examinations in the area of the lower extremities. Main features : - 15-element design (3x5 coil elements) with 15 integrated preamplifiers, - iPAT-compatible	+ \$46,800

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.

Siemens Healthcare is pleased to submit this Preliminary Pricing Proposal. A Preliminary Pricing Proposal is provided for planning purposes only; it is not contractually binding. To receive a contractually binding proposal for the Products listed above, inclusive of Terms, Conditions, and Warranty coverage, please contact your Siemens Healthcare Sales Representative.

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PRELIMINARY PROPOSAL

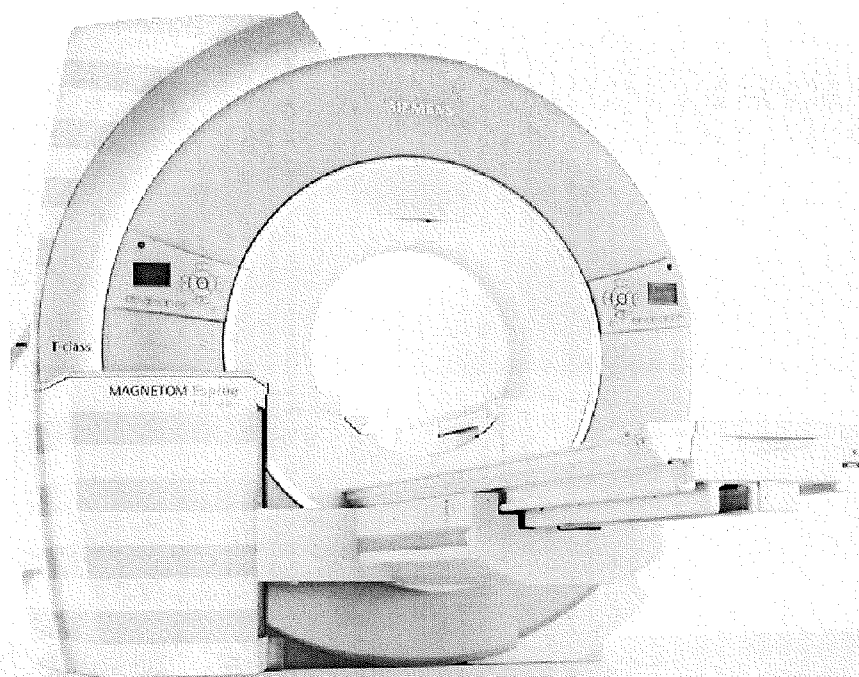
Siemens Healthcare

Karen Dixon
(865) 360-8644
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MAGNETOM ESPREE TYPICAL ROOM PLAN

MR



The intended use for this Cut Sheet is to communicate the spatial requirements as well as the basic architectural, electrical, structural, and mechanical requirements for this piece of imaging equipment. The information provided in this document is for reference only, during the pre-planning stage, and therefore does not contain any site specific detailed requirements. This information is subject to change without notice. Federal, state and/or local requirements may impact the final placement of the components. It is the customer's responsibility to ensure that the final layout and placement of the equipment complies with all applicable requirements.

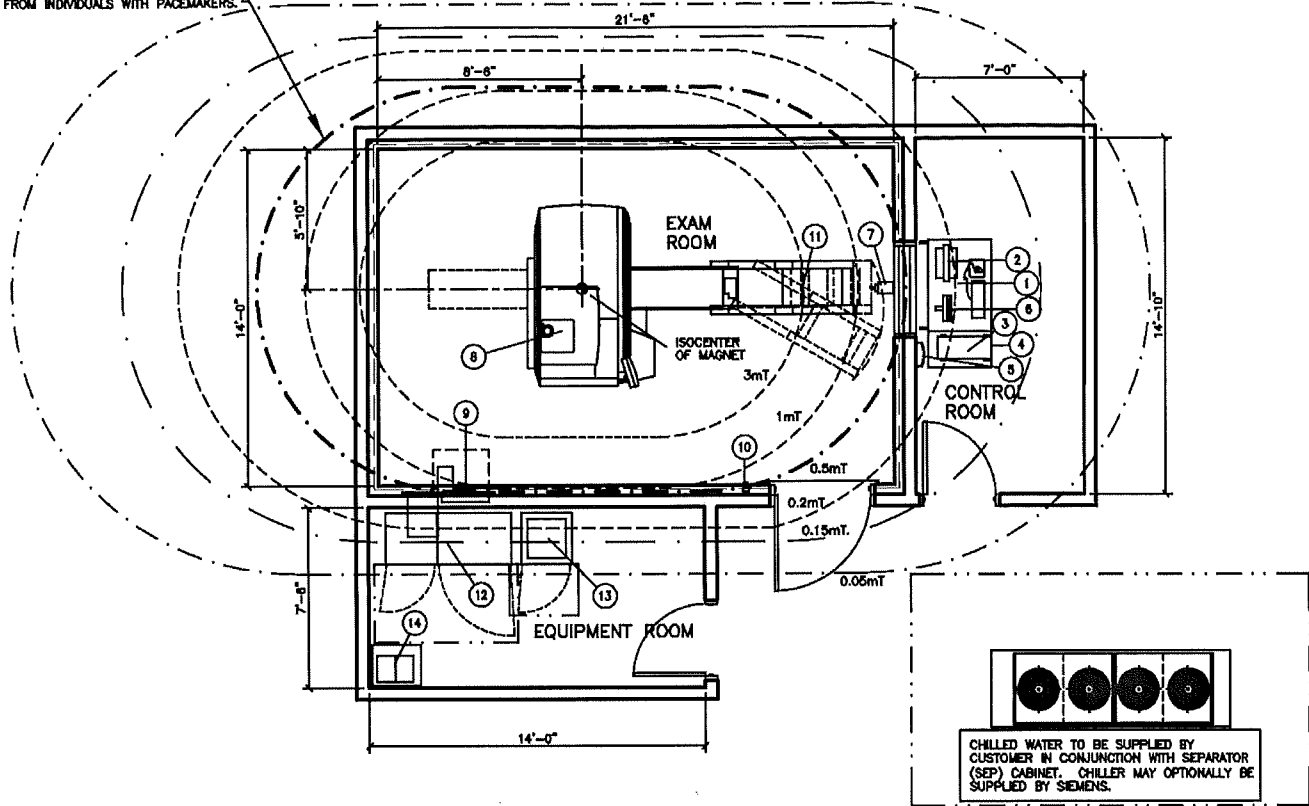
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FOR REFERENCE ONLY,
NOT FOR CONSTRUCTION.

MAGNETOM ESPREE TYPICAL ROOM PLAN

MR

IT IS THE OWNER'S RESPONSIBILITY TO RESTRICT THIS AREA (0.5mT FIELD) FROM INDIVIDUALS WITH PACEMAKERS.



TYPICAL PLAN

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

EQUIPMENT LEGEND

NO	DESCRIPTION	SMS SYM	WEIGHT (LBS)	BTU/HR TO AIR	DIMENSIONS (INCHES)			REMARKS
					W	D	H	
①	MRC OPERATING CONSOLE AND KEYBOARD	Ⓢ	132	---	45 11/16	35 1/4	28 3/8	
②	COLOR MONITOR FOR MRC	Ⓜ	22	239	18 5/16	18 15/16	4 3/4	ON CONSOLE/COUNTER
③	HOST PC MRC	Ⓟ	49	2389	11	27	18 1/8	
④	CONTAINER FOR HOST PC 450	Ⓜ	230	---	17 3/4	31 1/2	27 5/8	
⑤	ALARM BOX	Ⓜ	3	---	9	4	9	
⑥	PATIENT MONITOR (OPTION)	Ⓜ	10	---	13	7	12 1/2	
⑦	PATIENT SUPERVISION CAMERA (OPTION)	Ⓢ	8	---	3	6 5/8	5 3/4	
⑧	ESPREE MAGNET WITH COVERS AND PATIENT TABLE	Ⓜ	11244	7506	90 5/8	149 5/8	90 5/8	
⑨	RF-FILTER PLATE	Ⓢ	286	853	46 1/2	35 1/8	21 5/8	
⑩	MAGNET STOP	Ⓢ	1	---	3	5	3	
⑪	PATIENT TRANSPORT TROLLEY (OPTION)	Ⓢ	291	---	26 1/2	71 1/2	39 1/2	
⑫	ELECTRONICS CABINET (GPA, ACC & ACS)	Ⓢ	2755	13649	63	25 5/8	77 1/2	TOTAL OF GPA, CCA, CCS
⑬	SEP CABINET	Ⓢ	750	3412	25 5/8	25 5/8	73 5/8	
⑭	POWERWARE 9130 UPS (OPTION)	Ⓢ	76	1,257*	8 3/8	12 7/8	16 1/4	*1,755 ON BATTERIES

MAGNETOM ESPREE SPECIFICATIONS

MR

POWER REQUIREMENTS

VOLTAGE RANGE: 480 VAC $\pm 10\%$ FOR ALL LINE AND LOAD CONDITIONS.
VOLTAGE BALANCE: 2% MAXIMUM DIFFERENCE BETWEEN PHASES

FREQUENCY:	60 Hz ± 1.0 Hz
LINE IMPEDENCE:	< 95 mOhms
STAND BY POWER:	8.4/12.2 KW
HIGHEST AVERAGE POWER	37 KW
MAXIMUM POWER (LESS THAN 5 MINUTES)	85 KVA
MOMENTARY POWER (LESS THAN 5 SEC.)	100 KVA
MR SYSTEM FUSE RATING	125 A
RECOMMENDED UPS	120 KVA
UPS FUSE RATING	200 A
MAXIMUM ALLOWABLE VOLTAGE DROP AT MAXIMUM POWER, INCLUDING SOURCE IMPEDANCE, FEEDERS AND ANY TRANSFORMERS.	4.0%

POWER REQUIREMENTS

DEMAND AND CAPACITY REQUIREMENTS NOTES

- IF EQUIPMENT UPGRADE IS ANTICIPATED, INSTALLING ELECTRICAL POWER TO MEET THE REQUIREMENTS OF THE HIGHER POWER GRADIENT PACKAGE AT THE TIME OF INITIAL INSTALLATION WILL REDUCE THE COST TO UPGRADE THE ELECTRICAL SYSTEM LATER.
- RECOMMENDED TRANSFORMER SIZE (SYSTEM WITHOUT UPS) IS BASED ON INDUSTRY STANDARD ISOLATION TRANSFORMER KVA RATINGS. SOURCE IMPEDANCE FEEDING THE MAGNETOM SYSTEM, INCLUDING ANY ISOLATION TRANSFORMERS, MUST MEET EQUIPMENT REQUIREMENTS AS LISTED HERE. SIEMENS RECOMMENDS A TRANSFORMER WITH COPPER WINDINGS, AN ELECTRO-STATIC SHIELD, AND A LOW IMPEDANCE (<3%) TO ENSURE THAT SOURCE IMPEDANCE REQUIREMENTS ARE MET.
- OVERCURRENT PROTECTION IS SPECIFIED FOR SYSTEMS WITHOUT AN UNINTERRUPTIBLE POWER SUPPLY (UPS). ADDITION OF A UPS REQUIRES A HIGHER CAPACITY MAINS CONNECTION (DEPENDENT UPON UPS MODEL AND SIZE). MAXIMUM FAULT CURRENT IS DEPENDENT UPON THE IMPEDANCE OF THE FACILITY ELECTRICAL SYSTEM. CUSTOMER'S ARCHITECT OR ELECTRICAL CONTRACTOR TO SPECIFY AIC RATING OF OVERCURRENT PROTECTION BASED ON FACILITY IMPEDANCE CHARACTERISTICS.
- MOMENTARY POWER IS BASED ON A MAXIMUM RMS VALUE FOR A PERIOD NOT TO EXCEED FIVE (5) SECONDS, AS DEFINED IN NEC 517.2. STAND-BY AND AVERAGE CURRENT ARE SUBSTANTIALLY LOWER.
- THE CONDUCTOR SIZE SHOULD BE SELECTED TO MEET THE VOLTAGE DROP REQUIREMENTS, TAKING INTO CONSIDERATION THE MAINS CAPACITY, RUN LENGTH, AND ANY ADDITIONAL TRANSFORMERS USED TO OBTAIN THE PROPER EQUIPMENT VOLTAGE LEVEL. NEMA STANDARD XR-9-1989 (R1994,R2000) PROVIDES GENERAL GUIDELINES FOR SIZING CONDUCTORS, TRANSFORMERS, AND ELECTRICAL SYSTEMS FOR MEDICAL IMAGING SYSTEMS.
- LONG-TIME POWER IS BASED ON THE HIGHEST AVERAGE RMS VALUES FOR A PERIOD EXCEEDING 5 MINUTES DURING CLINICAL SYSTEM OPERATION, AS DEFINED IN NEC 517.2.
- A CIRCUIT BREAKER WITH A HIGH INRUSH RATING (>8x RATED CURRENT) IS REQUIRED TO PERMIT SWITCH-ON OF THE UPS SYSTEM WITHOUT SPURIOUS TRIPPING. CIRCUIT BREAKERS WITH AN ADJUSTABLE MAGNETIC TRIP (SIEMENS FD6 SERIES OR SIMILAR) ARE HIGHLY RECOMMENDED.

NOISE LEVELS

SYSTEM ROOM	NOISE LEVEL / dB(A)
CONTROL ROOM	</= 55 (AVERAGE VALUE)
EXAMINATION ROOM	</= 85.4 (8 HOUR AVERAGE) (+3dB(A) TOLERANCE = 92.9dB(A))
EQUIPMENT ROOM	</= 65 (AVERAGE VALUE)

THE PHYSICAL CHARACTERISTICS OF THE MR SYSTEM GENERATE A CERTAIN AMOUNT OF NOISE. THIS TABLE HAS INFORMATION TO INSTALL NOISE ATTENUATION TO MEET ANY STATE/LOCAL/OSHA CODES.

CEILING HEIGHTS

MAGNET ROOM	7'-11" TECHNICAL MINIMUM
MAGNET ROOM	8'-2" RECOMMENDED MINIMUM
CONTROL ROOM	6'-11" MINIMUM
EQUIPMENT ROOM	7'-3" MINIMUM

TRANSPORTING REQUIREMENTS

LARGEST ITEM WITHOUT PACKING MATERIAL: MAGNET-11,244 POUNDS
MAGNET AS DELIVERED FROM FACTORY WITHOUT TRANSPORT DEVICE:
7'-4" H. (WITHOUT 90° ELBOW MOUNTED) x 7'-7" W. x 8'-10" L

STANDARD ROOF OPENING - 9'-2" x 7'-11"

IF TRANSPORTING THE MAGNET UP A RAMP, A 15° MAXIMUM ANGLE MUST BE MAINTAINED.

TO TRANSPORT THE GPA/ACC CABINET (63" x 27" x 78" HIGH; 3307 POUNDS), A MINIMUM ROOM HEIGHT OF 6'-9" WITH TRANSPORT ROLLERS, OR 6'-5" WITHOUT ROLLERS IS REQUIRED.

REMOTE SYSTEM DIAGNOSTICS

SIEMENS REMOTE SERVICES (SRS) REQUIRES A CONNECTION BETWEEN THE SRS REMOTE SERVER AND SIEMENS SYSTEMS VIA REMOTE LOCAL AREA NETWORK ACCESS, TO ENSURE THE UPTIME OF YOUR SYSTEM.

THIS SERVICE REQUIRES ONE OF THE FOLLOWING CONNECTION METHODS:

- (PREFERRED) VPN - WHERE THE CUSTOMER HAS AVAILABLE A VPN CAPABLE FIREWALL OR OTHER VPN APPLIANCE.
- (OPTIONAL) *SRS ROUTER* - CONNECTED TO ANALOG PHONE LINE VIA *ANALOG MODEM*, ETHERNET CONNECTION TO CUSTOMER'S LAN, AND A POWER OUTLET. NOTE: = *SUPPLIED BY SIEMENS*

FOR MORE INFORMATION

FOR MORE DETAILED PLANNING REQUIREMENTS FOR THIS SYSTEM, SEE THE TYPICAL FINAL DRAWING SET NUMBER: 04103

MAGNETOM ESPREE SPECIFICATIONS

MR

CHILLED WATER SUPPLY

A CHILLED WATER SUPPLY IS REQUIRED TO THE MRI SYSTEM 24 HOURS A DAY, YEAR ROUND FOR HTE COLD HEAD AND GRADIENT SYSTEMS. THIS CAN BE PROVIDED BY A CENTRAL CHILLED WATER SUPPLY OR A SEPARATE STAND ALONE CHILLER THAT MEETS THE STATED REQUIREMENTS. THE CHILLED WATER CAN ALSO BE SUPPLIED BY A DEDICATED KRAUS KCC 215 CHILLER AND INTERFACE PANEL.

WITHOUT THE USE OF A DEDICATED KRAUS CHILLER, A SEP (SYSTEM SEPARATOR CABINET), MUST BE INCLUDED WITH THE SIEMENS ORDER. THE PIPE SIZE BETWEEN THE KRAUS CHILLER AND INTERFACE PANEL, OR BETWEEN THE WATER SUPPLY AND SEP MUST BE 2 INCH UP TO 82 FEET, 2-1/2 INCH UP TO 148 FEET, CONSULT FOR LONGER PIPE. PERMISSIBLE MATERIALS THAT CAN BE USED FOR THE PIPING ARE: STAINLESS STEEL (V2A, V4A), NON-FERROUS METAL (COPPER, BRASS), SYNTHETIC MATERIAL, PLASTICS, BRAZING SOLDER, HARD SOLDER, OR FITTING SOLDER TYPE 3 AND 4. THERE ARE MATERIALS THAT MAY CAUSE DAMAGE TO THE COOLING SYSTEM AND CANNOT BE USED, THESE MATERIALS ARE ALUMINUM, IRON, CARBON STEEL, ZINC, ZINC PLATED STEEL, OR STANDARD STEEL PIPES.

THESE REQUIREMENTS ARE REQUIRED FOR NEW INSTALLATIONS, IF EXISTING WATER PIPES COMPLY WITH SIEMENS WATER SPECIFICATIONS, THEY DO NOT NEED TO BE REPLACED.

NORMAL TAP WATER MUST BE AVAILABLE FOR FILLING THE SECONDARY WATER CIRCUIT. THERE SHALL BE A HOSE BIB LOCATED WITHIN 65' OF THE SEP, IFP, ACC OR THE KRAUS CHILLER.

THE SUPPLY AND RETURN CHILLED WATER PIPES MUST BE LABELED. THE LOCATION OF THE LABELS MUST BE AT ALL CONNECTION AND REFILLING POINTS AND MUST CONTAIN FLOW DIRECTION AND CONTENTS.

ENVIRONMENTAL REQUIREMENTS

1) AIR CONDITIONING IS TO PROVIDE A TEMPERATURE OF 70°F ±5°F IN THE EXAM ROOM, 70°F±10°F IN THE EQUIPMENT & CONTROL AREAS, RELATIVE HUMIDITY OF 40-60% (NON-CONDENSING) IS REQUIRED EXAMINATION ROOM AND 40-80% (NON-CONDENSING) IN ALL OTHER AREAS WHERE SIEMENS EQUIPMENT IS INSTALLED. THESE CONDITIONS ARE TO BE MET AT ALL TIMES; 24 HOURS A DAY, 7 DAYS A WEEK.

2) A DEDICATED AIR CONDITIONING AND HUMIDIFICATION SYSTEM IS RECOMMENDED FOR THE EXAM ROOM. A MINIMUM FRESH AIR EXCHANGE RATE OF 6 TIMES PER HOUR FOR THE EXAM ROOM IS REQUIRED. AIR SUPPLY AND RETURN ABOVE THE FINISHED CEILING IN THE EXAM ROOM IS RECOMMENDED. EACH ROOM SHOULD HAVE A DEDICATED CONTROL AND SENSOR TO MONITOR AND ADJUST THE AIR.

3) THE HEAT INTO THE EXAM ROOM IS LESS THAN 10,236 BTU/HR. THE HEAT INTO THE EQUIPMENT ROOM IS TYPICALLY 8,530 BTU/HR, MAXIMUM 17,060 BTU/HR. THIS HEAT DISSIPATION IS FROM THE SIEMENS EQUIPMENT ONLY. AUXILIARY SUPPORT EQUIPMENT (i.e UPS) AND LIGHTING MUST BE CONSIDERED FOR TOTAL HEAT LOADS.

4) IT IS IMPORTANT FOR FRESH AIR INTAKE SYSTEMS TO EXHAUST AIR DIRECTLY OUT OF THE BUILDING. THE EXHAUST AIR MUST NOT BE DEFLECTED INTO ANOTHER ROOM. THE MAGNET ROOM EXHAUST AIR SHOULD BE INSTALLED AT LEAST 6'-6" ABOVE FINISHED FLOOR.

5) THE AIR INTAKE OF THE AIR CONDITIONING SYSTEM MUST NOT BE LOCATED IN THE VICINITY OF THE QUENCH VENT EXHAUST.

6) IF THE INPUT DRAWS UPON AIR FROM OUTSIDE THE BUILDING, IT IS RECOMMENDED TO INSTALL AN ON-SITE FILTER TO REMOVE DUST PARTICLES GREATER THAN 10 MICRONS.

QUENCH VENT NOTES

LIQUID AND GASSEOUS HELIUM ARE USED IN THE OPERATION OF A SUPERCONDUCTING MRI SYSTEM. THE MECHANICAL CONTRACTOR SHALL PROVIDE A VENT, ACCORDING TO SIEMENS SPECIFICATIONS, TO EXHAUST GASSEOUS HELIUM FROM THE MAGNET TO OUTSIDE THE BUILDING. PLEASE SEE THE SIEMENS TYPICAL DRAWINGS FOR DETAILS.

CHILLED WATER REQUIREMENTS

WATER REQUIREMENTS TO BE MEASURED AT THE SEP CABINET.

FLOW RATE:	23.78-29.05 GPM
WATER TEMPERATURE:	48°F ±4°F
BTU DISCHARGE TO THE WATER	163,793 BTU/HR
WATER PRESSURE	MAXIMUM 87 PSI
LOSS OF PRESSURE FOR SEP CABINET	14.5 PSI MAXIMUM
CHILLED WATER ACIDITY RANGE	6 pH TO 8 pH
CHILLED WATER HARDNESS	<250 ppm CALCIUM CARBONATE
CHLORINE GAS CONCENTRATION	<200 ppm
FILTRATION	500 μm

FOR INSTALLATION OF A KRAUS KCC 215 CHILLER, IT IS THE RESPONSIBILITY OF THE CUSTOMER/MECHANICAL CONTRACTOR TO FLUSH PROVIDE A MIXTURE OF WATER WITH 35%-38% ETHYLENE GLYCOL PRIOR TO CHILLER START UP. DO NOT USE PROPYLENE GLYCOL OR AUTOMOTIVE ANTI-FREEZE.

THE AMOUNT OF THE MIXTURE MUST FILL THE CHILLER, MR SYSTEM AND PIPING (SUPPLY AND RETURN), SEE EXAMPLES BELOW.

(1) GALLON OF UNDILLUTED GLYCOL, OR (2) GALLONS OF WATER/GLYCOL MIXTURE MUST REMAIN ON SITE FOR USE AFTER START UP.

MIXTURE VOLUME INCLUDING SUPPLY & RETURN+15 GAL. CHILLER & MR

PIPE DIAMETER	TOTAL LENGTH	MIXTURE VOLUME	GLYCOL NEEDED
2"	100'	31.3 GALLONS	11.9 GALLONS
2"	200'	47.6 GALLONS	18.1 GALLONS
2.5"	100'	40.5 GALLONS	15.4 GALLONS
2.5"	200'	66.0 GALLONS	25.1 GALLONS

MIXTURE VOLUME = 3.14 x (PIPE RADIUS)² x PIPE LENGTH + 15 GALLONS.
GLYCOL AMOUNT = 35-38% OF MIXTURE VOLUME.

BUILDING VIBRATIONS

EXTERNAL VIBRATIONS OR SHOCKS AFFECTING THE MAGNET MAY DEGRADE IMAGE QUALITY. VIBRATIONAL ACCELERATION a_{max} TRANSFERRED THROUGH BUILDING VIBRATIONS TO THE MAGNET MAY NOT BE EXCEEDED IN THE THREE SPATIAL ORIENTATIONS IN THE FREQUENCY RANGE FROM 0 TO 70 Hz.

BUILDING VIBRATION SPECIFICATION: $a_{max} = -70dB g$

THE REQUIREMENT FOR a_{max} IS $-70dB g$ MEASURED AS MAXIMUM RMS VALUE PER FREQUENCY COMPONENT <0.5Hz IN THE FOURIER TRANSFORMATION OF THE RECORDED SIGNAL SPECTRUM.

MAGNETOM ESPREE SPECIFICATIONS

MR

PROTECTING THE ENVIRONMENT

PROTECTING THE IMMEDIATE ENVIRONMENT FROM THE EFFECT OF THE MAGNETIC FIELD REQUIRES CONSIDERATION. INFORMATION STORED ON MAGNETIC DATA CARRIERS SUCH AS DISKS, TAPES, AND CREDIT CARDS MAY BE ERASED IF IN CLOSE PROXIMITY. CAUTION WITH REGARD TO HEART PACEMAKERS MUST BE EXERCISED. MOST PACEMAKER UNITS EMPLOY A REED RELAY WHICH MAY CHANGE OPERATING MODE WHEN EXPOSED TO AN EXTERNAL MAGNETIC FIELD. THEREFORE, PACEMAKER USERS MUST BE KEPT AT A SPECIFIED DISTANCE FROM THE MAGNET WHICH IS DETERMINED BY THE MAGNETIC FIELD STRENGTH.

PROTECTING THE MAGNETIC FIELD

THE SIEMENS MAGNETOM UTILIZES A SUPERCONDUCTIVE MAGNET WITH AN EXTREMELY HOMOGENEOUS FIELD WITHIN THE MAGNET TO PROVIDE DISTORTION-FREE IMAGING. THE PRESENCE OF FERROMAGNETIC MATERIAL WITHIN THE VICINITY OF THE MAGNET CAN ADVERSELY AFFECT THE UNIFORMITY OF THE USEFUL MAGNETIC FIELD. THIS APPLIES TO STATIONARY FERROUS MATERIAL (STRUCTURAL STEEL) WHICH IS TO BE MINIMIZED. STATIONARY STEEL COMPENSATION MAY BE ACHIEVED BY MAGNET POSITIONING AND SELECTIVE USE OF SHIMS. FIELD DISTORTION ENCOUNTERED BY MOVING FERROMAGNETIC OBJECTS IS MORE DIFFICULT TO COMPENSATE AND MAY REQUIRE THE USE OF MAGNETIC SHIELDING.

MAGNETIC FRINGE FIELDS

MAGNETIC FIELDS MAY AFFECT THE FUNCTION OF DEVICES IN THE VICINITY OF THE MAGNET. THESE DEVICES MUST BE OUTSIDE CERTAIN MAGNETIC FIELDS. THE DISTANCES LISTED ARE FROM THE MAGNET ISOCENTER AND DO NOT CONSIDER ANY MAGNETIC ROOM SHIELDING.

X/Y AND Z AXIS	DEVICES
6'-2" / 9'-3" 3.0mT	SMALL MOTORS, WATCHES, CAMERAS, CREDIT CARDS, MAGNETIC DATA CARRIERS (SHORT-TERM EXPOSURE)
7'-7" / 11'-6" 1.0mT	COMPUTERS, MAGNETIC DISK DRIVES, OSCILLOSCOPES, PROCESSORS
8'-3" / 13'-2" 0.5mT	CARDIAC PACEMAKERS, X-RAY TUBES, INSULIN PUMPS, B/W MONITORS, MAGNETIC DATA CARRIERS (LONG-TERM STORAGE)
10'-3" / 16'-9" 0.2mT	SIEMENS CT SCANNERS
10'-10" / 17'-9" 0.15mT	COLOR MONITORS, SIEMENS LINEAR ACCELERATORS
14'-2" / 23'-8" 0.05mT	X-RAY IMAGE INTENSIFIERS, GAMMA CAMERAS, PET/CYCLOTRON, ELECTRON MICROSCOPES, LINEAR ACCELERATORS

THE OWNER/USER IS TO VERIFY THE LOCATION OF THE 0.5mT FIELD AND ENSURE THAT IT IS MAINTAINED AS A RESTRICTED AREA.

MAGNET SITING REQUIREMENTS

IT MUST BE ENSURED THAT THE MAGNET IS LOCATED SO THAT THE STABILITY AND HOMOGENEITY OF THE MAGNETIC FIELD ARE NOT ADVERSELY AFFECTED BY EXTRANEOUS FIELDS AND STATIC OR DYNAMIC FERROMAGNETIC OBJECTS.

X/Y AND Z AXIS	SOURCE OF INTERFERENCE
3'-6"	FLOOR STEEL REINFORCEMENT < 20 LBS./ FT ² IRON BEAMS < 66 LBS./FT.
16'-1" / 19'-1"	STRETCHERS UP TO 110 LBS.
13'-2"	A/C CHILLERS
17'-5" / 21'-4"	TRANSPORT DEVICES UP TO 440 LBS.
18'-1 / 24'-8"	VEHICLES UP TO 2,000 LBS.
20'-5" / 29'-7"	ELEVATORS, TRUCKS UP TO 10,000 LBS.
39'-5"/26'-3"	AC TRANSFORMERS LESS THAN 100 KVA
41'-1"/32'-10"	AC TRANSFORMERS LESS THAN 250 KVA
42'-8"/39'-5"	AC TRANSFORMERS LESS THAN 650 KVA
46'-0"/49'-3"	AC TRANSFORMERS LESS THAN 1600 KVA
9'-11"/6'-7"	AC CABLES, MOTORS LESS THAN 100 AMPS
23'-0"/9'-11"	AC CABLES, MOTORS LESS THAN 250 AMPS
131'-2"	ELECTRIC RAILWAY SYSTEMS

FOR IRON OBJECTS LOCATED UP TO 45' FROM THE Z AXIS, THE DISTANCES FOR THE Z AXIS MUST BE USED. REDUCTION IS POSSIBLE WITH STEEL SHIELDING.

MAXIMUM CABLE LENGTH

THERE ARE 6 DIFFERENT CABLE SETS THAT ARE AVAILABLE FOR THE MRI SYSTEM DIFFERENTIATED BY MAXIMUM LENGTHS FROM THE MAGNET TO THE FILTER PANEL (INSIDE) AND FROM THE FILTER PANEL TO THE ELECTRONICS (OUTSIDE).

	INSIDE	OUTSIDE
SET 1	20'	4'
SET 2	20'	32'
SET 3	20'	39'
SET 4	30'	4'
SET 5	30'	29'
SET 6	46'	13'

THE VERTICAL DISTANCE FOR CABLE TRAVEL FROM THE FILTER PANEL TO THE CABLE TRAY, AND FROM THE CABLE TRAY TO THE MAGNET MUST BE CONSIDERED.

THE MAXIMUM DISTANCE FROM THE ACC CABINET TO THE CONTROL CONSOLE IS 75 FEET.

RF SHIELDING

THE EXAMINATION AREA MUST BE SHIELDED TO PROVIDE A REDUCTION OF RADIO FREQUENCY WAVES EMANATING FROM EXTERNAL TRANSMITTERS. THE REQUIRED ATTENUATION IS 90dB IN THE FREQUENCY RANGE OF 15-128 MHz. IF CO-SITING TWO SYSTEMS EACH ROOM SHOULD BE 100 dB. THE RF SHIELD MUST BE TESTED BEFORE AND AFTER MAGNET PLACEMENT IN THE RF ROOM AND AFTER THE SIEMENS RF FILTER PANEL IS INSTALLED.

THE RF-SHIELDING MUST BE INSULATED FROM ALL GROUNDS SUCH THAT THE ONLY GROUND IS THE SINGLE POINT GROUND ON THE OUTSIDE OF THE RF-ROOM WALL.

ALL ELECTRICAL LINES INTO THE RF ROOM MUST BE ROUTED THROUGH RF FILTERS (PROVIDED BY RF SHIELDING SUPPLIER). ALL ELECTRICALLY NON-CONDUCTIVE SUPPLY LINES (E.G. OXYGEN) INTO THE RF ROOM MUST BE ROUTED THROUGH RF SEALED WAVE GUIDES (PROVIDED BY RF SHIELDING SUPPLIER).

FOR PRESSURE EQUALIZATION PURPOSES THE RF DOOR SHOULD OPEN TO THE OUTSIDE OF THE RF ROOM. AS AN ALTERNATIVE A 24"x24" OPENING IN THE RF ROOM FOR PRESSURE EQUALIZATION IS REQUIRED.