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

June 18, 2014

Kimberly Jacobs
Kings Medical Group
1920A Georgetown Road
Hudson, OH 44236

Exempt from Review - Replacement Equipment

Business:	Kings Medical Group
Project Description:	Replace existing grandfathered GE Signa mobile MRI scanner with a new Siemens Magnetom Espree mobile MRI scanner
Counties:	Guilford; Mecklenburg

Dear Ms. Jacobs:

In response to your letter of June 11, 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 mobile MRI scanner, Serial # R3070. 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.

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,

Celia C. Inman
Project Analyst

Martha J. Frisone, Interim Chief
Certificate of Need Section

cc: Medical Facilities Planning Branch, 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

King's Medical Group
An Employee Owned Company

1920A Georgetown Road
Hudson, OH 44236

June 11, 2014

Martha Frisone, Chief
Certificate of Need Section
North Carolina Department of Health and Human Services
Division of Health Service Regulation
2704 Mail Service Center
Raleigh, North Carolina 27699-2704

Re: Kings Medical Group/Notice of Replacement Equipment

Dear Ms. Frisone:

On behalf of Kings Medical Group ("Kings"), I am writing to inform the CON Section of Kings' intention to replace one of its existing grandfathered mobile MRI scanners (the "Existing Unit") with a new Siemens Magnetom Espree mobile MRI scanner (the "New Unit"). The Existing Unit is currently serving Guilford Neurological Associates in Greensboro, Novant Health Imaging Mooresville and Novant Health Imaging University in Charlotte. *See* Table 9K of the 2013 SMFP reflecting the grandfathered status of this unit. The total capital cost for the New Unit, inclusive of all items essential to acquire the New Unit and make it operational is $1,573,328. The capital costs for the New Unit are broken down as follows:

Item	Vendor	Cost	Notes
MRI System	Siemens	$1,470,400 plus $102,928 in tax =$1,573,328	
Trailer	Siemens	Included in price	Trailer/Coach is included in the price listed on the quote ($1,470,400)
Grand Total		**$1,573,328**	

The equipment quote is attached as Exhibit A. The foregoing reflects all activities essential to acquiring the New Unit and making it operational.

A copy of the Capital Cost Form is attached as Exhibit B, and a copy of the equipment comparison form is attached as Exhibit C. Upon approval of this replacement equipment exemption request, the Existing Unit will be removed from the State of North Carolina, and it will not be brought back into North Carolina without CON approval.

The New Unit meets the definition of "replacement equipment" in N.C. Gen. Stat. § 131E-176(22a) because it costs less than $2 million and is purchased for the sole purpose of replacing comparable medical equipment currently in use which will be sold or otherwise disposed of when replaced. Further, the New Unit meets the requirements of 10A NCAC 14C.0303(c) because it is functionally similar to the Existing Unit and is used for the same diagnostic or treatment purposes. The New Unit also meets the requirements of 10A NCAC 14C.0303(d) because:

(1) it has the same technology as the equipment currently in use, although it may possess expanded capabilities due to technological improvements; and

(2) it is functionally similar and is used for the same diagnostic or treatment purposes as the equipment currently in use and is not used to provide a new health service; and

(3) the acquisition of the equipment does not result in more than a 10% increase in patient charges or per procedure operating expenses within the first twelve months after the replacement equipment is acquired.

None of the exclusions in 10A NCAC 14C.0303(e) applies here. *See* Equipment Comparison Form attached as Exhibit C.

Accordingly, based on the foregoing, we respectfully ask the CON Section to confirm that Kings' proposed acquisition of the New Unit is exempt from CON review pursuant to N.C. Gen. Stat. 131E-184(a)(7).

We appreciate your prompt consideration of this information.

Sincerely,

Kimberly Jacobs

Kings Medical Group

PROPOSED CAPITAL COSTS

Project Name Kings Mobile MRI Upgrade

Proponent: Kings Medical

A.	Site Costs			
	(1)	Full purchase price of land		$ _____
	(2)	Acres _____ Price per Acre $_____		
	(3)	Closing costs		$_____
	(4)	Site Inspection and Survey		$_____
	(5)	Legal fees and subsoil investigation		$_____
		Site Preparation Costs		
		Soil Borings		$_____
		Clearing-Earthwork		$_____
		Fine Grade For Slab		$_____
		Roads-Paving		$_____
		Concrete Sidewalks		$_____
		Water and Sewer		$_____
		Footing Excavation		$_____
		Footing Backfill		$_____
		Termite Treatment		$_____
		Other (Specify)		$_____
		Sub-Total Site Preparation Costs		$_____
	(6)	Other (Specify)		$_____
	(7)	Sub-Total Site Costs		$ **N/A**
	(8)	Construction Contract		
	(9)	Cost of Materials		
		General Requirements		
		Concrete/Masonry		
		Woods/Doors & Windows/Finishes		
		Thermal & Moisture Protection		
		Equipment/Specialty Items		
		Mechanical/Electrical		
		Other (Specify)		
		Sub-Total Cost of Materials		$_____
	(10)	Cost of Labor		$_____
	(11)	Other (Specify)		**$N/A**
	(12)	Sub-Total Construction		**$N/A**
B.	Miscellaneous Project Costs			
	(13)	Building Purchase	$_____	
	(14)	Fixed Equipment Purchase/Lease (MR, Coach, Injector, Printer, Coils)	$1,470,400	
	(15)	Movable Equipment Purchase/Lease	$_____	
	(16)	Furniture	$_____	
	(17)	Landscaping	$_____	
	(18)	Consultant Fees		
		Architect and Engineering Fees	$_____	
		Legal Fees	$_____	
		Market Analysis	$_____	
		Other (taxes and shipping)	$_____	
		Sub-Total Consultant Fees (All Inclusive)	$_____	
	(19)	Financing Costs (e.g. Bond, Loan, etc.)		$_____
	(20)	Interest During Construction		$_____
	(21)	Other (taxes and shipping)		$102,928
	(22)	Sub-Total Miscellaneous		$1,573,328
	(23)	Total Capital Cost of Project (Sum A-C above)		$ 1,573,328

I certify that, to the best of my knowledge, the above construction related costs of the proposed project named above are complete and correct.

Not Applicable
(Signature of Licensed Architect or Engineer)

I assure that, to the best of my knowledge, the above capital costs for the proposed project are complete and correct and that it is my intent to carry out the proposed project as described.

Kimberly Jacobs — CFO

(Proponent – signature of officer) (Title of officer)

EQUIPMENT COMPARISON – MR REPLACEMENT
KINGS MEDICAL MOBILE MRI REPLACEMENT

	EXISTING EQUIPMENT	**REPLACEMENT EQUIPMENT**
Type of Equipment (List Each Component)	MRI Scanner	MRI Scanner
Manufacturer of Equipment	General Electric	Siemens
Tesla Rating for MRIs	1.5T	1.5T
Model Number	GE Signa	Magnetom Espree
Serial Number	R3070	TBD
Provider's Method of Identifying Equipment	Internal ID Kings 1 Grandfathered Mobile	Internal ID – will be identified as Kings 1 Grandfathered Mobile
Specify if Mobile or Fixed	Mobile	Mobile
Mobile Trailer Serial Number/VIN #	1S9FA4829311822646	TBD
Mobile Tractor Serial Number/VIN #		
Date of Acquisition of Each Component	2004	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 or Certified
Total Capital Cost of Project (Including Construction, etc.) <Use Attached Form>		$1,470,400
Total Cost of Equipment		$102,928
Fair Market Value of Equipment	$171,000	$1,573,328
Net Purchase Price of Equipment	Same	Same
Locations Where Currently Operated	Guilford Neurological Associates – Greensboro Novant Health Imaging Mooresville – Mooresville Novant Health Imaging University - Charlotte	Guilford Neurological Associates – Greensboro Novant Health Imaging Mooresville – Mooresville Novant Health Imaging University - Charlotte
Number Days In Use/To Be Used in N.C. Per Year	365 (less any holidays)	365 (less any holidays)
Percent of Change in Patient Charges (by Procedure)	NA	NA
Percent of Change in Per Procedure Operating Expenses (by Procedure)	NA	NA
Type of Procedures Currently Performed on Existing Equipment	MRI Scans	MRI Scans
Type of Procedures New Equipment is Capable of Performing	MRI Scans	MRI Scans

SIEMENS

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

SIEMENS REPRESENTATIVE
Karen Dixon - (865) 360-8644

PRELIMINARY PROPOSAL

Customer Number: 0000007799

Date: 5/8/2014

Sold to:

Kings Medical Group
1894 Georgetown Road
Hudson, OH 44236

Ship to address: SVSR, Attn: Ronnie Taylor – 852 Memorial Highway – Harmony, NC 28634
Service sites: Charlotte & Greensboro NC

Quote Nr: **1-8M186E 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	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.
1	14401479	**Mobile Configurator #Es**

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PRELIMINARY PROPOSAL

Qty	Part No.	Item Description
1	14413897	**RS I-class #Tim** I-class is the new generation of Tim-based MRI scanners, which enables innovative applications and workflow efficiency. The I-class package comprises: - 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	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.
1	14442519	**RS WARP syngo #Tim** syngo WARP integrates different techniques tailored to reduce susceptibility artifacts caused by orthopedic MR-conditional metal implants.
1	14413876	**RS Composing syngo #Tim** This application provides dedicated evaluation software for creating full-format images from overlapping MR volume data sets and MIPs (starting from syngo MR B13) acquired at multiple stages.
1	14413871	**RS Inline Composing syngo #Tim** This Inline Package includes a dedicated software for the generation of full-format images from overlapping MR volume data sets and MIPs from several steps - fully automatic, directly after measurement.
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.
1	14413770	**RS Inline Diffusion #Tim** Automatic real-time calculation of trace-weighted images and ADC maps with Inline technology. Compatible to single-shot diffusion-weighted EPI.
1	14413783	**RS Body Matrix Coil #Tim** 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
1	14413795	**RS Double Loop Array Coil #Tim** The Double Loop Array Coil consists of two flexible, anatomically adaptable 7 cm ring coils for simultaneous examination of both TMJs, the eyes or the wrists with optimized, excellent image quality.
1	14413838	**RS Cable Set syngo 11/9 #Es** Cable length inside the cabin 11 m, cable length outside the cabin 9 m. Inclusive Ethernet Twisted Pair Adapter and 10 m cable.

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PRELIMINARY PROPOSAL

Qty	Part No.	Item Description
1	14413853	**RS Venting Kit Sea Freight #Av,Es** 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).
1	14406340	**RS Helium Fill 30/70 #S;Av;Es;TATS** Helium Fill for cold delivery ex works.
1	14413807	**RS Separator #Av;Es** 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 theses 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
1	14413825	**RS UPS Cable #Tim** 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.
1	14417559	**RS UPS system** 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
1	14417560	**RS UPS Battery module** 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
1	MR_MOB_RIG _INST	**MR Mobile Rigging and Installation**
1	MR_MEDCTRA ILER	**MedicalCoaches Siemens CertifiedMRCoach** MR_MEDCTRAILER Medical Coaches (MEDC) mobile MR trailer for use with the Siemens (mobile ready) MAGNETOM Symphony, Espree or Avanto - 1.5T MRI System. The standard Siemens certified MR trailer meets Medical Coaches' specification #020706/6385, Drawing #D20250. Vehicle sizing and Power requirements prepared to USA Standards.
1	MR_PM	**MR Project Management** 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.
1	MR_CRYO	**Standard Cryogens**
1	4MR5142869	**Armrest #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.

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Fax: (866) 309-6967

SIEMENS REPRESENTATIVE
Karen Dixon - (865) 360-8644

PRELIMINARY PROPOSAL

Qty	Part No.	Item Description
1	MR_FOLLOWUP_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_SYN_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.

System Total: $1,470,400

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.

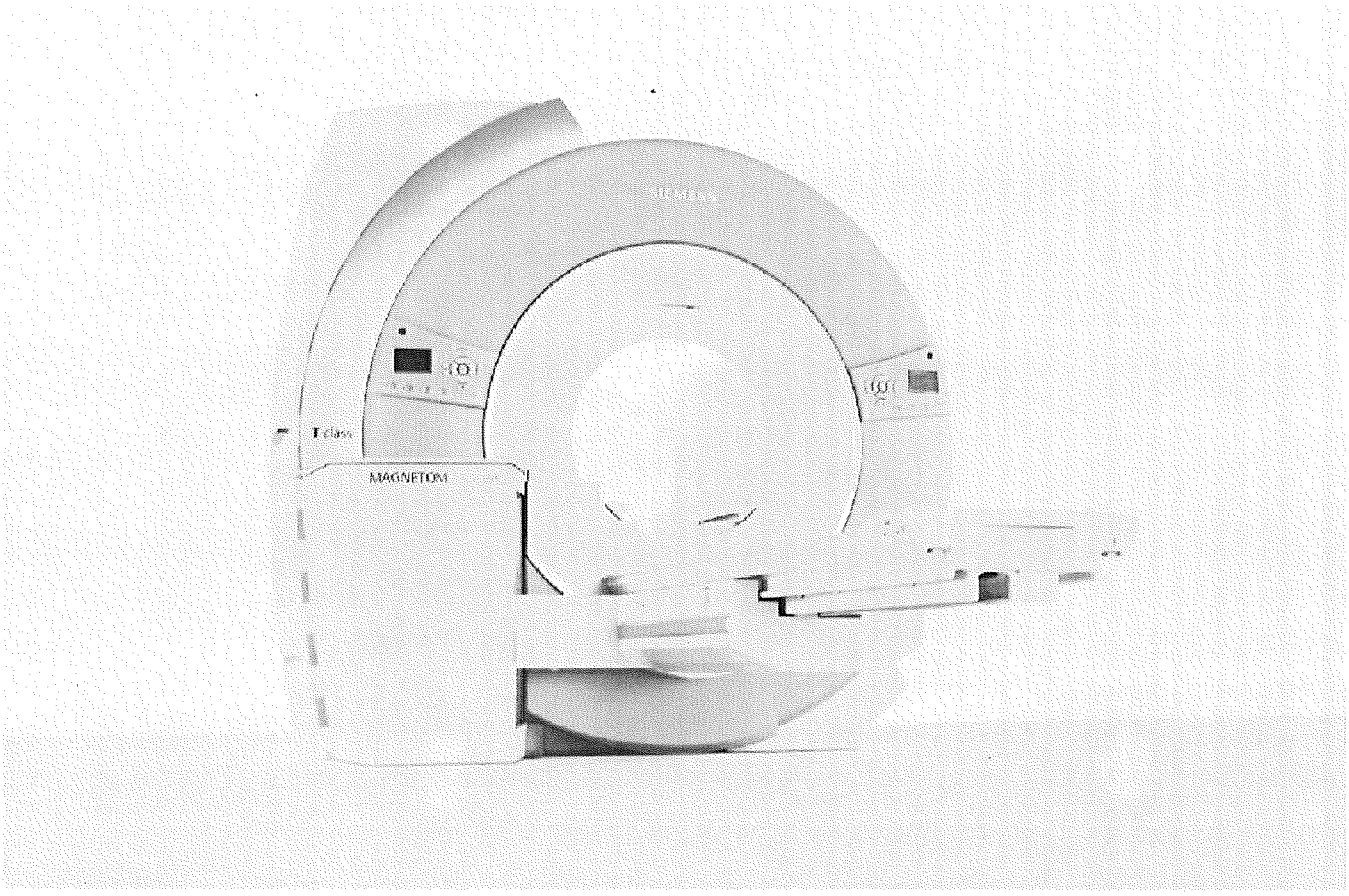
Siemens Healthcare

Karen Dixon
(865) 360-8644
karen.dixon@siemens.com

SIEMENS

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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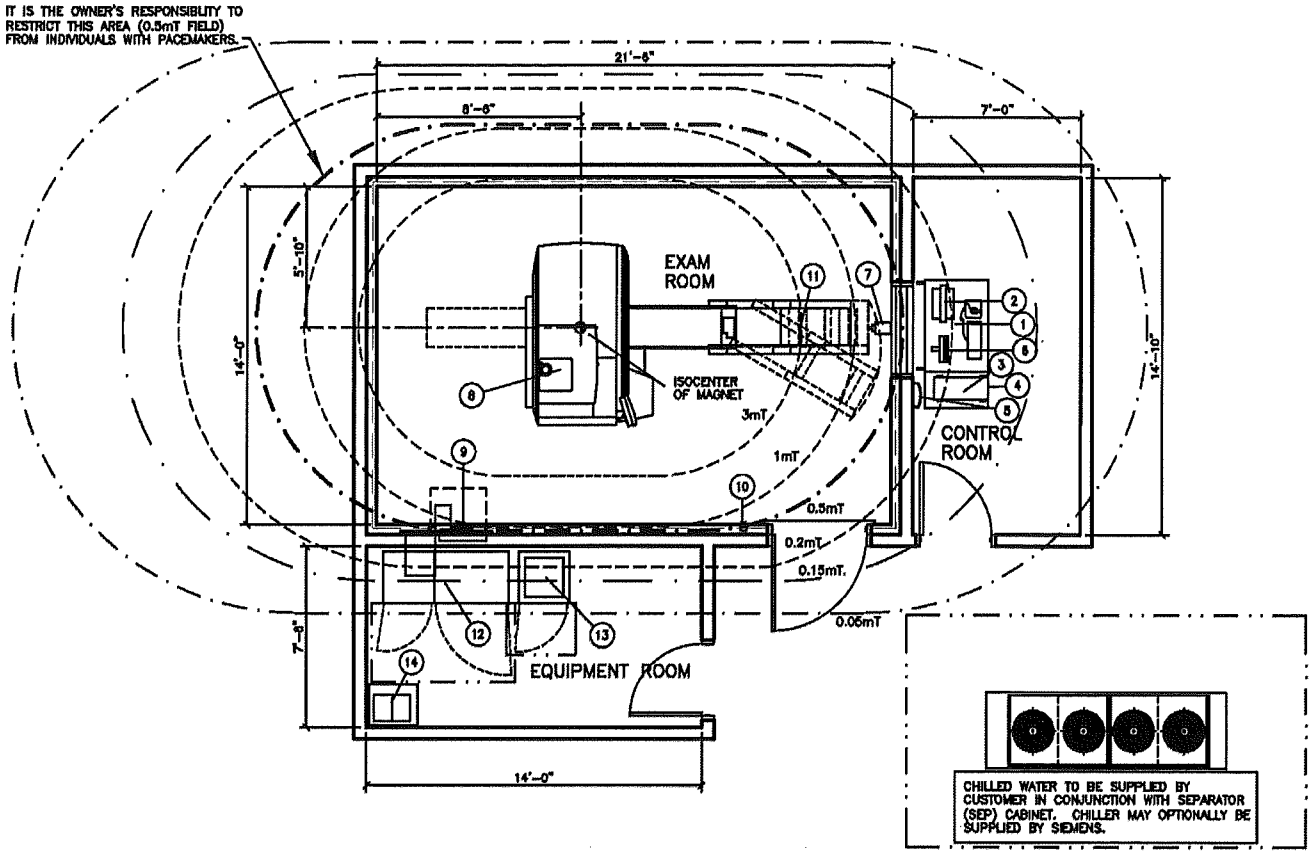
NOT FOR CONSTRUCTION.

MAGNETOM ESPREE

TYPICAL ROOM PLAN

MR



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

EQUIPMENT LEGEND

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

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MAGNETOM ESPREE

SPECIFICATIONS

MR

POWER REQUIREMENTS

VOLTAGE RANGE: 480 VAC ±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

1) 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.

2) 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.

3) 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 FACILTY IMPEDANCE CHARACTERISTICS.

4) 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.

5) 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.

6) 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.

7) 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:
1. (PREFERRED) VPN - WHERE THE CUSTOMER HAS AVAILABLE A VPN CAPABLE FIREWALL OR OTHER VPN APPLIANCE.
2. (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

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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 (ie 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.

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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^4 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.