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EFFECTS OF FIELD STRENGTH OVER IMAGE QUALITY IMPROVEMENTS. Felix W. Wehrli. General Electric Company.

Major factor contributing to image quality on NMR CT scanners is the signal to noise ratio. Experimental studies have also confirmed that the S/N ratio is improved in proportion to the field strength. The experiments were conducted on several NMR CT scanners of 0.15 to 1.5T field strength.
In the case of X ray CT, image quality can be improved by making available for scanning more photons one way or another (for example, increased tube current).
But the image on NMR CT scanners are primarily determined by the number of protons, T1 or T2. The improvements in the S/N ratio on NMR CT scanners are therefore very important.
There are several ways of improving the S/N ratio such as (1) averaging and (2) larger voxel or slice thickness size. But such methods lead to disadvantages as longer scan time or image degradation due to partial volume effect. The studies conducted by the author and colleagues have evaluated the favorable influence of the stronger field strength over image quality.

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INSTALLATION ON AN NMR IMAGING SYSTEM IN A CLINICAL HOSPITAL. H.Kawaguchi and M.Kiri. Central Research Laboratory of SHIMADZU CORPORATION. Kyoto.

A resistive magnet type NMR imaging system which has been investigated as a prototype system at SHIMADZU CORPORATION, was transfered to, reassembled, and readjusted at University of Tokyo (Department of Radiology, Faculty of Medicine). Since NMR imaging is a method that detects extremely weak electronic signal, its performance is dependent on the electromagnetic environment of its installation site. Therefore, in order to obtain its optimum operating level at a different environment, procedures appropriate for the installation site need to be taken. For the present activity, particularly as a measure to cope external noises, double shields had been constructed for a section of its gantry. Influence of iron structures on the homogeneity of the static magnetic field was eliminated by mechanically tuning the magnet coil.

The performance of the instrument has been improved as well as many clinical investigations have been carried out.

The main features of the system are as follows:

Static magnetic field intensity	: 0.15 Tesla
Method of image	: Spin-Warp method
Image pixels	: 256 x 256
Image calculation speed	: 1 imge/minute
Measurement condition	: For all of the parameters, any desired setting is possible.

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DUAL ZLC ROTA CAMERA SYSTEM. N.Shibahara, R.Ban and S.Wakabayashi. Shimadzu Corporation. Kyoto.

This system is a new dual-head ECT instrument. The detectors rotates around the patient. As each detector has the built-in image correction function (ZLC), uniformity and linearity are very excellent. Especially on ECT images the effect of this correction is obvious. The counter-balanced gantry enables easy-operation. All studies including whole body and ECT imagings can be performed with one bed. A major advantage of the ROTA CAMERA with dual detectors is that dual opposing views, scanned simultaneously, can increase patient throughput. Low energy collimators are light and exchangeable easily. Two images from dual detectors can be exposed simultaneously on a film with a Micro Dot Imager TM.

This system has two types of detectors; one is high-sensitivity ZLC-37, the other high resolution ZLC-75.

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POWERED MOBILE BASE FOR MaxiCamera 200A/M AND 300A/M. N.Tanaka. YOKOGAWA MEDICAL SYSTEMS, Ltd. Tokyo.

The Powered Mobile Base for MaxiCamera 200A/M and 300A/M Systems is designed for mobile nuclear imaging in critical care units, emergency rooms or multi-location nuclear departments. The Base can accommodate either the MaxiCamera 200A or the MaxiCamera 300A detector and associated electronic modules. Mobile imaging can be useful for cardiac or intensive care patients, for traction, isolation or neonatal areas. Either detector is equipped with the Autotune ZS circuitry for automatic adjustment of the photomultiplier tubes and for linearity and energy corrections. The imaging detector is mounted on a counterbalanced assembly which provides fast, easy positioning at bedside. Vertical and angular detector motions are controlled by electromagnetic brakes through a Gimbal assembly.
Lateral motion is accomplished by a unique baseplate rail system which permits the detector assembly to be moved towards or away, extending the reach of the detector across the bed, without moving the mobile base. Detector positioning is controlled by friction locks. The drive control mechanism is a "wheelchair-type" joystick which permits forward reverse and turns with ease.