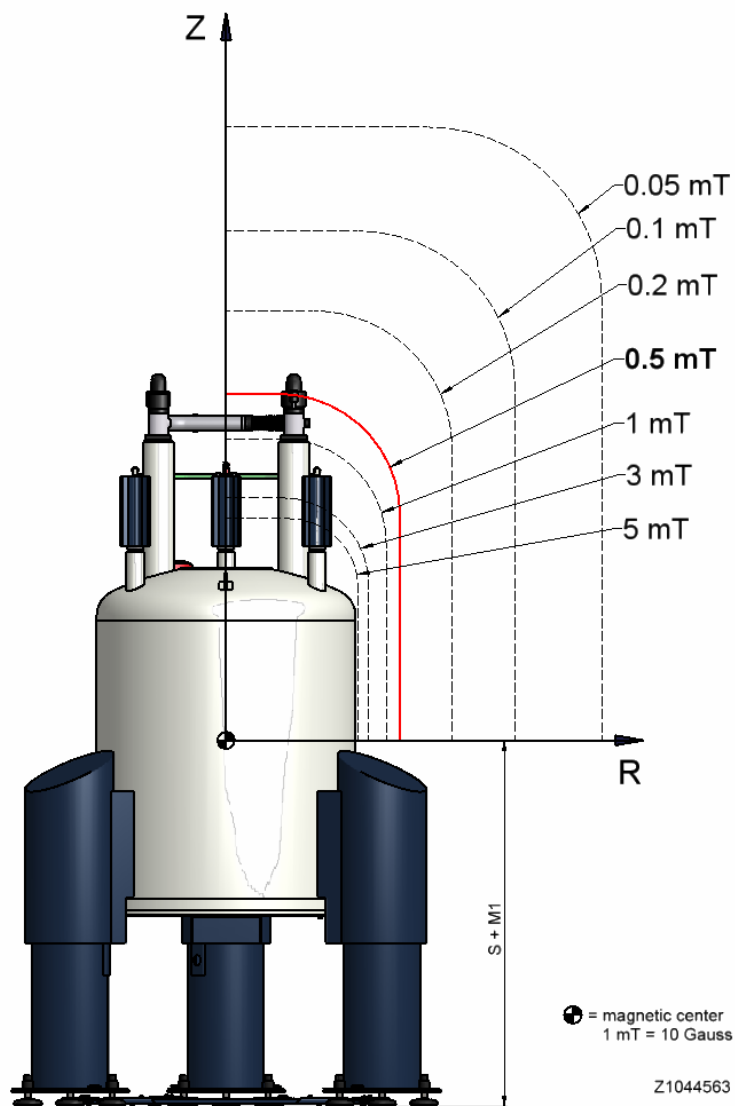


PERMIT TO WORK – NMR Instrument room, Ground floor, NDMRB

Overview			
Individual(s) involved:			
Company/organisation:		Telephone no:	
Date of work:		Duration of permit:	
Location of work:			
Description of work:			
Hazard identification - as identified by a risk assessment			
<ol style="list-style-type: none"> 1. Magnetic Static Field – metal buckles, steel capped boots and any other metal object on the person may be strongly attracted when close to the magnet. 2. Liquid Helium –possible ‘quenching’ in the event of magnet failure 3. Low oxygen atmosphere 			
Safety precautions - as identified by a risk assessment and including access arrangements, personal protective equipment and/or equipment, alarm or guard isolation			
<ol style="list-style-type: none"> 1. Anyone approaching the magnetic field MUST remove ALL metal objects. Persons fitted with pacemakers or metallic implants and prostheses should avoid working with the NMR and must not get closer than the 5 gauss line. 2. In the event of magnet quench: Personnel should evacuate the NMR laboratory IMMEDIATELY if a magnet quenches – let the door to the room close. The buildings manager, the lab manager and Paul Brennan MUST be informed immediately – ‘Bruker’ must be informed and a re-fill can be arranged. Do NOT enter the room until the oxygen alarm stops sounding 3. In the event that the low oxygen alarm sounds the room MUST be evacuated IMMEDIATELY. Do NOT enter the room during an alarm even if someone has collapsed in the room. Call for help - Contact the buildings manager and security. Only if it is absolutely safe to do so i.e. indications are that the Oxygen content is above 18%, then remove the individual to the fresh air and call for a First Aider. If the victim is unconscious, obtain Medical Assistance immediately. 			
Authorisation – by department		Acceptance – by contractor	
I authorise the work to be carried out as detailed within this permit to work and confirm that all prior precautions are in place:		I understand the hazards outlined and will ensure the work is conducted under the conditions of this permit to work:	
Name:		Name:	
Signature:		Signature:	
Date/time:		Date/time:	
Handback – by department		Handback – by contractor	
We certify that the work is complete/incomplete*, all previous controls have been reinstated and the area has been left in a safe state. (<i>*if not, detail additional precautions below</i>)			
Name:		Name:	
Signature:		Signature:	
Date/time:		Date/time:	
Extension – if risks remain, detail additional safety precautions.			

Appendix 1: The 5 Gauss Line:



The '5 Gauss Line' - This line specifies the perimeter around a NMR scanner within which the static magnetic fields are higher than five gauss. Five gauss and below are considered 'safe' levels of static magnetic field exposure for the general public.

In the diagram the '5 Gauss Line' is illustrated in red.

Fringe Field Plot	Radial R	Vertical Z
200mT (Directive 2004/40/EC)	Inside Cryostat	Inside Cryostat
5mT	0.38m	0.64m
3mT	0.41m	0.70m
1mT	0.46m	0.87m
0.5mT	0.50m	1.00m
0.2mT	0.65m	1.24m
0.1mT	0.83m	1.47m
0.05mT (~Earth Magnetic field)	1.08m	1.77m

Image and data from 'Bruker Magnetic Sales Information, January 2011, ZTKS0192-00'