

## 3T/7T MRI FACILITY

<b>SOP Number:</b>	<b>310-01</b>
<b>Title</b>	<b>MRI System Start-up</b>

<b>Revision Chronology</b>		
<b>Version Number</b>	<b>Date</b>	<b>Changes</b>
<b>310.01</b>	<b>01 March 2010</b>	

**Facility Manager Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**ROBARTS RESEARCH INSTITUTE**  
**CENTRE FOR FUNCTIONAL AND METABOLIC MAPPING:**  
**3T MRI FACILITY**

**Standard Operating Procedure #310-01**

**MRI System Start-up**

**1. Introduction**

- 1.1 Research involving Magnetic Resonance Imaging (MRI) at high magnetic field strengths present unique hazards to both research subjects and individuals working within and around the MRI system. Consequently, the potential for serious personal injury is present due to the sheer size and strength of the static magnetic field along with the immense flexibility of the research system and associated peripheral hardware.
- 1.2 There exist dangerous and potentially lethal levels of electricity in the 3T MRI system. As such, it is important that all individuals working around the MRI system be aware of the dangers and therefore knowledgeable as to the safety issues concerning electricity. Furthermore, current carrying cables, connections and junction points in the vicinity of the main magnetic field are particularly susceptible to damage due to the extreme Lorentz forces created through the normal operation of the system. Periodically, the effects of prolonged mechanical fatigue will result in breakage causing electrical arcing, sparking and high heat levels before the system can shut down. There therefore becomes a high potential for personal injury and the possibility of a fire being ignited.
- 1.3 Equipment in the 3T MRI Facility is sensitive to the order used in powering the system up and down. If the proper procedures are not followed, the equipment may be damaged. Only qualified operators are to perform the following procedure.
- 1.4 Training is required to perform any procedure on the system involving equipment in the Equipment Room. The training includes location and function of the equipment in the Equipment Room. See SOP#110-01 "Safety and Operator Training Procedures".

**2. Start-up Procedure**

- 2.1 If you are unsure of any of the steps in the following procedure, DO NOT CONTINUE. Immediately contact the Facility Manager.
- 2.2 The Startup procedure is the same for both the Powered Down and Standby states.
- 2.3 In the event that there is power loss to the entire MRI system or one of the emergency electrical shutdown buttons has been depressed, DO NOT proceed any further. Immediately contact the Facility Manager.
- 2.4 Otherwise begin the startup procedure in the order outlined below:
  - 2.4.1 Press the "SYSTEM ON" button located on the Siemens control panel.

- 2.4.2 Do not plug or unplug any RF coils or move the bed while the system is booting. This may cause system errors and may necessitate a system reboot.
- 2.4.3 When the system is fully operational:
  - 2.4.3.1 You will hear 3 knocks from the magnet.
  - 2.4.3.2 A “System Online” message will appear in the Magnet Status window.
  - 2.4.3.3 The red line will disappear from the Magnet Status icon.
- 2.4.4 The system is now booted and ready to scan.