

# ROBARTS RESEARCH INSTITUTE

## CENTRE FOR FUNCTIONAL AND METABOLIC MAPPING: 3T/7T MRI FACILITY

Standard Operating Procedure #325-01  
Last Updated: August 15, 2008

### 7T MRI System Shutdown

#### 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 both the 3T and 7T MRI systems. As such, it is important that all individuals working around the MRI systems 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/7T 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#120-01 "Safety and Operator Training".

#### 2. Shutdown 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 Turn off Gradient Small Signal Unit (GSSU).
  - 2.2.1 Press S403 on D16 board.
  - 2.2.2 Turn off GSSU main power (orange switch).
- 2.3 Turn off power to both the 4 kW and 7 kW RF Power Supplies (RFPS).
- 2.4 Turn off power to the Console.
  - 2.4.1 Toggle silver switch in right hand cabinet to the down position.

- 2.4.2 Shut off main power to console at the rear of cabinet (near floor).
- 2.5 Press the stop button (red) on the breaker panel at the bottom of the power distribution panel.
- 2.6 The system should be OFF at this point.