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C-A OPERATIONS PROCEDURES MANUAL

11.3.1 Procedure for Operating the PHOBOS Magnet  
(10 O'clock Intersection Region)

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Collider-Accelerator Department Chairman Date

Y. Makdisi, D. Barton

## 11.3.1 Procedure for Operating the PHOBOS Magnet (10 o'clock Intersection Region)

### 1. Purpose

The scope of these procedures covers the operation of the PHOBOS Magnet. The PHOBOS magnet has been run successfully for extended periods during magnet mapping at RHIC in February/March 1999 and this document was written with experience gained from that period.

#### 1.1 Definitions

The "PHOBOS Magnet Key Switch" is an auxiliary key switch in the interlock string. The DC current cannot be operated unless the key is inserted in the key switch, turned and captive. The switch is intended for experimental use for detector work of short duration.

### 2. Responsibilities

- 2.1 Magnet operation is the responsibility of a qualified magnet operator or CAS technician under the leadership of the Shift Leader or Operations Coordinator.
- 2.2 The CAS Watch is responsible for LOTO of the magnet power supply when requested by the magnet operator.
- 2.3 The magnet operator shall assure that the magnet settings are not changed without authorization from the MCR coordinator when beam is circulating.
- 2.4 The magnet operator or Shift Leader is responsible to get approval from the Main Control prior to turning the magnet ON or OFF.

### 3. Prerequisites

- 3.1 Magnet operators and Shift Leader are trained in basic PHOBOS specific magnetic safety, including sweeping of the experimental area, in changing the PHOBOS magnet power supply current and in emergency shut down of the magnet power supply. In addition, the Shift Leader is also trained according to Collider Shift leader training.

### 4. Precautions

- 4.1 No one in the PHOBOS Collaboration is authorized to modify the magnet cooling, power connections or safety systems in any way.

- 4.2 The PHOBOS magnet power supply shall be energized only by CAS personnel operating under C-A Operational procedures Manual (OPM) standards.
- 4.3 If there is work in progress that does not comply with the magnetic safety requirements for personnel, magnet or detectors then the PHOBOS magnet power supply shall not be energized.

## 5. **Procedure**

The Control Zone is the area inside the 5-Gauss line. An outline of this region is marked on floor.

### 5.1 PHOBOS Magnet Turn-On

- 5.1.1 If any work is to be done within the 5 Gauss control Zone of the PHOBOS magnet, the magnet power supply is to be secured with a LOTO tag or with the PHOBOS Magnet Key Switch. The PHOBOS Magnet Key is in the "PHOBOS MAGNET KEY SWITCH" box in the counting house and can only be removed by a Shift Leader or qualified magnet operator.
- 5.1.2 Before powering the PHOBOS magnet the Shift leader, or qualified magnet operator shall make a careful and thorough search to establish that ALL magnetic materials have been removed at a minimum of 1 meter outside the Control Zone. The Shift Leader shall notify the PHOBOS Operations Manager that the magnet will be energized.
- 5.1.3 Shift personnel will call the Main Control Room, ext. 4662, and request that CAS unlock the AC power to energize the PHOBOS magnet power supply and then wait for the arrival of CAS personnel.
- 5.1.4 If the cooling water flow is off, then the cooling water shall be turned on by a Pump Room technician according to C-A OPM standards.
- 5.1.5 Only the CAS power supply technician is authorized to energize the power supply with 480 Volts AC. The power supply shall only be energized after the Shift Leader has verified that the area has been swept. The CAS power supply technician shall then energize the power supply (without applying current to the PHOBOS magnet) and verify that the "Magnet On" lights in the PHOBOS IR are lit, if access to the tunnel permitted.
- 5.1.6 Any personnel in the PHOBOS Experimental Region shall be informed by the Shift Leader or qualified magnet operator that the magnet is coming on.
- 5.1.7 Main Control must be notified before turning on the magnet.

5.1.8 Following the detailed Ramping procedure the PHOBOS magnet current can then be ramped up to the desired value. In no case will the magnet current setting exceed the design current of 3.6 kA. The power supply cut-out current will be set to trip at 3.7 kA.

## 5.2 PHOBOS Magnet Turn-off

Normal shutdown of power supply shall be performed only by CAS personnel.

The Shift Leader shall notify the PHOBOS Operations Manager that the magnet will be secured.

Shift personnel shall call the Main Control Room, ext 4662, and request that CAS turn-off the AC power to PHOBOS. The shift crew then waits for arrival of C-A personnel.

The CAS technician will proceed according to C-A OPM standards. They will:

5.2.1 Call MCR to inform them that the magnet will be turned off.

5.2.2 Ramp down the magnet current (if necessary).

5.2.3 Turn off the AC power to the power supply.

5.2.4 If a prolonged shut-down is anticipated, then CAS shall be informed by the Shift Leader to ensure that the cooling system is secured and AC is locked out from power supply.

## 5.3 **Emergency Procedures During PHOBOS Magnet Operation**

In case of emergency, such as fire:

5.3.1 Stay calm. Evaluate the situation.

5.3.2 Crash the magnet power using either black button on the power supply “(OFF)” or one red of the magnet crash buttons in the tunnel.

5.3.3 Pull the fire alarm box and alert others of the danger.

5.3.4 Call Lab Emergency, ext. 2222, or 911, from the nearest safe phone.

5.3.5 If a knowledgeable person is present, then he/she shall turn-off the AC disconnect switch for the power supply. At least one person shall wait in a safe place for the Fire/Rescue Group to act as the Local Emergency Coordinator. All other personnel should evacuate the building and proceed

to the outside assembly point.

5.3.6 If during operations, notify the Operations Coordinator (OC) at x4662. The CAS Watch may be contacted by phone at x2024 if the MCR cannot be contacted.

**6. Documentation**

None

**7. References**

None

**8. Attachments**

None