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C-A OPERATIONS PROCEDURES MANUAL

5.29 Facility and Beam Transport Shutdown

Text Pages 2 through 4

Hand Processed Changes

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Approved: \_\_\_\_\_ *Signature on File* \_\_\_\_\_  
Collider-Accelerator Department Chairman Date

P. Ingrassia

## 5.29 Facility and Beam Transport Shutdown

### 1. Purpose

To provide instructions to MCR operators to shut down facilities (RHIC, AGS, Booster, LINAC, NSRL) and beam transport equipment. This procedure will be followed at the end of a scheduled facility running period.

### 2. Responsibilities

- 2.1 The MCR operators are responsible for the execution of this procedure at the end of a facility running period.
- 2.2 The Head of Operations will inform the MCR when to begin the shutdown.
- 2.3 The MCR Group Leader (MCRGL), or designee, will see that the procedure is implemented upon the shutdown of the whole facility or a part of the facility.
- 2.4 Liaison Physicists (LP) and Liaison Engineers (LE) have responsibility for securing a facility and will assist as required.
- 2.5 Health Physics is responsible to change facility postings as required.

### 3. Prerequisites

- 3.1 All personnel involved in working on any electrical system or equipment in the C-A Department shall be familiar with BNL ES&H Standards 1.5.0, 1.5.1, and 1.5.2. C-A will provide on-site/work specific training to individuals in the electrical safety aspects of their job functions and assignments.
- 3.2 LOTO Training

### 4. Precautions

- 4.1 All personnel shall ensure their own safety by following the standards, safety rules, and the training they receive. In general, all energy sources must be locked out and tagged. Working on or near energized sources is not permitted unless a valid Energized Electrical Work (EEW) permit has been issued. Personnel shall utilize tools, instruments, equipment (e.g., proper connectors and proper ac line cords), etc., that are safe and proper for the job. If any part of a job appears unsafe to any individual it is their duty to discontinue work and inform the supervisor, manager, ESH Coordinator or the C-A ESHQ Division Head, of the unsafe condition.

- 4.2 Computer controlled equipment that is secured by opening an energy disconnect switch should be turned off either via the computer or locally before opening the switch.

## 5. Procedures

- 5.1 Secure the appropriate critical device.
  - 5.1.1 The knowledgeable facility LP shall apply RS LOTO to secure the critical device.
- 5.2 Cancel all SEB clearances and maintain primary beam enclosures in the Access Prohibited state unless instructed otherwise.
- 5.4 LOTO
  - 5.4.1 The AGS ([C-A-OPM 2.6.1](#) attachment b)
  - 5.4.2 The Booster (OPM 2.6.1 attachment d)
  - 5.4.3 Long term shutdown LOTO [C-A OPM 2.6.4](#) all attachments
  - 5.4.4 LOTO RHIC elements as required
  - 5.4.5 LOTO NSRL elements as required
- 5.5 IF appropriate, notify Mechanical Services (Pump Room) when equipment is turned off.
- 5.6 Lock appropriate “Security /ACS/PASS” keys in MCR key locker.
- 5.7 Turn off all non essential MCR equipment.
- 5.8 MCRGL, or designee, shall request that the ESHQ Division Head notify BNL Police when MCR shall remain un-staffed.
- 5.9 Complete necessary radiation surveys prior to setting a facility to Restricted Access.
  - 5.9.1 After step [5.4](#) has been carried out (using [C-A OPM 2.6.1](#) attachments b and d), and after an HP survey of the required areas have been completed, THEN the areas may be placed on “Restricted Access” with the concurrence of the Maintenance Supervisor.

- 5.10 Place chipmunks in the appropriate mode (alarming/interlocking) for shutdown facilities.
  - 5.10.1 The MCRGL, or designee, shall ask the appropriate LP to determine and communicate to the Radiological Control FS Representative, or the Radiological Control Technical Supervisor.
    - 5.10.1.1 The interlocking (non-interlocking) state for all Chipmunks in the facility.
    - 5.10.1.2 The alarm state (on or off) for all Chipmunks in the facility.
    - 5.10.1.3 The RCT Technicians shall set and control the interlocking and alarming state of the chipmunks during operation and shutdown, but not during testing by the Access Controls Group.
- 5.11 The MCRGL, or designee, shall ask Health Physics to change postings for shutdown facilities as required.
- 5.12 Idle Beam Transport/Beam Lines
  - 5.12.1 IF during accelerator operation, some beam lines (A,B,C,D,V) are expected to remain idle for four or more weeks, THEN the MCR Group Leader, or designee, shall contact the appropriate Liaison Physicist and ask them to apply RS LOTO to disable the beam line.
  - 5.12.2 IF during accelerator operation, some beam transport lines (LtB, U) are expected to remain idle for four or more weeks, THEN the MCR Group Leader, or designee, shall contact the appropriate Liaison Physicist and ask them to apply RS LOTO to disable the beam transport line.

## 6. **Documentation**

- 6.1 LOTO Checklists from C-A-OPM [2.6.1](#), [2.6.3](#), [2.6.4](#), [2.6.6](#).
- 6.2 [C-A-OPM 9.1.16.b RS LOTO Log Sheet](#)

## 7. **References**

- 7.1 [C-A-OPM 2.6.1, "Lockout/Tagout for the AGS and Booster Rings, During Accelerator Operations"](#).
- 7.2 [C-A-OPM 2.6.3, "Lockout/Tagout for the Booster Main Magnet Power Supply"](#).
- 7.3 [C-A-OPM 2.6.4, "Lockout/Tagout for the AGS and Booster Rings for Shutdown Periods"](#).
- 7.4 [C-A-OPM 2.6.6, "Lockout/Tagout for the AGS Main Magnet Power Supply"](#).
- 7.5 [C-A-OPM ATT 9.1.16.b "RS LOTO Log Sheet"](#)

## 8. **Attachments**

None