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C-A OPERATIONS PROCEDURES MANUAL

4.60 Procedures for Access to BEAMSTOP/BLIP Pump Room (Bldg. 946)

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Hand Processed Changes

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

E. Lessard

## 4.60 Procedures for Access to BEAMSTOP/BLIP Pump Room (Bldg. 946)

### 1. Purpose

To provide instructions for safe access to the Beamstop/BLIP pump room, which has a radiation hazard when LINAC is on.

### 2. Responsibilities

- 2.1 Water Systems Technicians inspect, service and maintain this pump room and implement this procedure.
- 2.2 MCR operators and Collider-Accelerator Support (CAS) Technicians are responsible for this procedure when Pump Room personnel require access while LINAC is on.

### 3. Prerequisites

- 3.1 Personnel must have "C-A Access Training".
- 3.2 Personnel must wear a TLD badge, a self-reading dosimeter, a chirping dosimeter, and carry an AB15 key.
- 3.3 All personnel involved in working on any electrical system or equipment in the C-A shall be familiar with [BNL SBMS Electrical Safety Subject Area](#). C-A will provide on-site/work specific training to individuals in the electrical safety aspects of their job functions and assignments.
- 3.4 The Water Systems Technicians, Linac Operations Coordinator and MCR Operators shall be trained in this procedure.
- 3.5 A copy of this procedure shall be posted at the inside door of this pump room by the Water Systems Supervisor.
- 3.6 Two persons are required for working periods exceeding one hour.

### 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, "Working Hot", is not permitted unless a valid working hot 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 ESSHQ Division Head, of the unsafe condition.

- 4.2 Verify that the radiation monitor (chipmunk NMO61) is not in the red zone. If the light is red, entry is not permitted.
- 4.3 The chipmunks (NMO61, NM065) have an alarm limit of 10 mrem/hr and an interlock limit of 250 mrem/hr.

**Warning:**  
**Be aware that the radiation at the pump room heat exchanger can be 15 times greater than at the chipmunk.**

- 4.4 The pump room radiation levels should be low except during periods when beam is being stopped in one of the three 200 MeV beamstops, (NZ086, LTB #1 or NZ304/307). Beam is not sent to these stops under normal operations.
- 4.5 The external gate of this pump room shall remain locked except for access.

## 5. **Procedure**

**Note:**  
For stays in the Pump Room greater than 1 hour, two persons are required. The job of the second person shall be to watch radiation levels reported on the Chipmunk face.

- 5.1 NM061, NM065 are visible from outside the Pump Room door. Check that the chipmunk is reading # 20 mrem/hr, (i.e., reading in the green or yellow zone). If in red, entry is not permitted.
- 5.2 If you are planning an entry to last less than 10 minutes, proceed to 5.4.
- 5.3 Notify MCR and the Linac Control Room that personnel will be working in the pump room.
  - 5.3.1 Ask MCR to notify you if chipmunks NM061, NM065 alarm.
  - 5.3.2 Linac Control Room should post warning sign (Attachment 8.1).
  - 5.3.3 RS LOTO the 440 AC for Bending-Magnet 1 ACME Power Supply.
- 5.4 Personnel shall check their dosimeters and the Chipmunk every 5 minutes when working in the area.

- 5.5 If the chipmunks (NMO61, NM065) go into the red zone at 50 mrem/hr, the audible alarm (chirping) will be approximately 130 chirps/min or 2 chirps/sec) while working in the area, LEAVE the pump room immediately, CHECK your dosimeters and NOTIFY MCR.
- 5.5.1 Complete this procedure to secure the area.
- 5.5.2 When exiting, check that all personnel have left the pump room.
- 5.5.3 Lock and reset the pump room door using an AB15 key.
- 5.5.4 Lock the external gate.
- 5.6 If MCR was notified as in Step 5.3.1, THEN inform MCR that work is complete.
- 5.7 If the warning sign was applied as per Step 5.3.2, THEN notify Linac Control Room that work has been completed and that the warning sign may be removed.
- 5.8 If RS LOTO was applied as per Step 5.3.3, THEN remove the RS LOTO on the 440 VAC input to the BM1 Acme Power Supply.

**6. Documentation**

None

**7. References**

None

**8. Attachments**

- 8.1 [C-A-OPM-ATT 4.60.a "Linac Posting"](#).