

4.56 Procedure for Sweeping Primary Beam Enclosures – Controlled Access

1. Purpose

- 1.1 The primary purpose of this procedure is to outline the methodology of good sweep practices.
- 1.2 Also, the purpose of this procedure is to provide Main Control Room (MCR) Operators and support personnel instructions for sweeping Primary Beam enclosures which includes using the appropriate sweep checklists, in order to clear the enclosure of Personnel.
- 1.3 For the execution of this procedure, the term “operator” in the attached checklist refers to personnel from Collider-Accelerator Support (CAS), Siemens, the Rf Group, as well as MCR Operators.

2. Responsibilities

- 2.1 Operators are responsible for ensuring that all personnel have exited, or been accounted for, in the Primary Beam Enclosures being swept.
- 2.2 The sweep team leader, shall be responsible for, assuring that the beam enclosure is not occupied when the area is reset, assuring that the area is not reset until all personnel have exited, entering all required information on the appropriate checklist, and for filing them in the appropriate binder in MCR.
 - 2.2.1 A sweep team may be composed of one or more operators.
 - 2.2.2 Two or three person sweep teams may be required to execute different procedure steps using different checklists, as in the Phenix sweep.
 - 2.2.3 The sweep team leader has the authority to abort a sweep if, in their judgment, the sweep cannot be properly executed, for example if inadequate roof shielding is discovered.
 - 2.2.4 The sweep team leader will be responsible for the prerequisites called for on each checklist.
 - 2.2.5 The sweep leader will carry and initial the checklist unless told to do otherwise by the procedure or checklist.
- 2.3 The Operations Coordinator (OC) is responsible for deciding when a sweep is to be performed and when an aborted sweep should be re-performed. The OC is also responsible for assigning personnel to the sweep team(s).

3. Prerequisites

Note:

The Linac and external beam caves contain elements that are electrically barriered and need not be LOTO before sweeping.

- 3.1 The AGS and Booster rings shall be LOTO before the enclosures are swept free of personnel.
- 3.2 Sweep personnel shall carry the appropriate checklist, keys, padlocks, TLD's, dosimeters, and lanterns required to perform the sweep procedure.
- 3.3 Primary Beam Enclosures shall be nearly free of personnel before a sweep is begun.
- 3.4 The OC shall assemble and determine the make up of sweep teams required by the procedure. The person designated as Team Leader shall be responsible for any keys and checklists required by the procedure.
- 3.5 Sweep personnel shall have completed the appropriate training including:
 - 3.5.1 use of the PASS system to sweep/operate the security system for U,V,W,X,Y, beam lines and the RHIC ([C-A-OPM 4.44 "Operation of PASS"](#)).
 - 3.5.2 hazards related to very high magnetic fields in order to sweep the Muon Storage Ring,
 - 3.5.3 Collider-Accelerator Access Training
 - 3.5.4 Annual review of the job specific Radiation Work Permit for sweeping including the attached Work Instructions.

4. Precautions

- 4.1 Check with Health Physics to learn if special precautions are needed.
 - 4.1.1 ALWAYS contact HP/RCT before sweeping a Contamination Area
- 4.2 While sweeping make certain to perform the following:
 - 4.2.1 View over, under, and behind transport elements for personnel
 - 4.2.2 Tell any personnel encountered that they must exit in front of you through the unsecured area and out of the appropriate gate.
 - 4.2.3 View the cave outer shielding to make certain there are no openings. IF any "daylight" is seen or openings found, THEN the sweep shall be aborted and the OC notified.

5. Procedure

- 5.1 Team Leader establishes that the enclosure is ready for sweeping by verifying that
 - 5.1.1 the enclosure is nearly empty of personnel,
 - 5.1.2 LOTO has been performed according to [C-A OPM 2.6.1](#), where appropriate.
- 5.2 Team Leader shall assemble a team to sweep the enclosure after consulting the appropriate procedure checklist to determine:
 - 5.2.1 how many persons are required for the sweep,
 - 5.2.2 whether a gate watch is required (AGS Ring), and
 - 5.2.3 which keys, padlocks, and other prerequisites are required.
- 5.3 Team Leader shall make an announcement over the public address system that the enclosure is to be swept and will be placed on Controlled Access status.

Note:

No Public Address System exists in the AtR or RHIC enclosures.

- 5.4 Team Leader shall switch (or request that a switch be made) the appropriate enclosure to Controlled Access state at MCR_2 console if required to do so by the appropriate checklist.
- 5.5 Find the latest revision of the checklist in the C-A OPM, or the Sweep Checklist Binder.

Note:

IF the procedure is in checklist format, THEN the "C-A GATE SECURITY LOG SHEET", [C-A-OPM-ATT 4.1.a](#), need not be filled out.

- 5.6 The Sweep Team shall then sweep the enclosure free of personnel, using good sweep practices. Good sweep practice always includes:
 - 5.6.1 consulting HP to learn of special conditions in the enclosure before a sweep, and ALWAYS contacting HP before sweeping a Contamination Area.
 - 5.6.2 observing postings on activated components in order to keep dose ALARA,
 - 5.6.3 recording the names of personnel found in the enclosure and verifying that they exit with the sweep team, or verifying that their name(s) appear on a gate log as having exited.
 - 5.6.4 searching over, under, and around every obstacle in the enclosure for personnel,

- 5.6.5 searching every dead end for personnel,
 - 5.6.6 searching every void having an opening larger than 23 cm (9 in) for personnel that may be stranded,
 - 5.6.7 keeping secured areas free of personnel when assigned the responsibility for the static watch,
 - 5.6.8 searching for "daylight" through the shielding,
 - 5.6.9 finding and removing (or having removed) tools and equipment left behind by workers, and
 - 5.6.10 having HP check for activation of items removed from beam enclosures.
 - 5.6.11 Always signing the C-A Radiation Work Permit (RWP) Access Control Log before and after sweeping a Primary Beam Area (RHIC does not require an RWP for sweeping at the present time).
- 5.7 The Team Leader shall notify the OC that the sweep is completed or the reasons why it was aborted.
- 5.8 The Team Leader shall have the appropriate stations reset at MCR_2 console in order to achieve READY status.
- 5.9 Saving checklists
- 5.9.1 IF a checklist was used to perform the sweep THEN the Team Leader shall sign the completed checklist and file it in Completed Sweep Checklist Binder.
 - 5.9.2 IF an OPM procedure was used to perform the sweep THEN the Team Leader shall file the completed Gate Sign In sheets in the appropriate binder.

6. **Documentation**

- 6.1 Completed checklist filed in Completed Sweep Checklist Binder

7. **References**

- 7.1 [C-A-OPM 2.6.1 "Lockout Tagout procedure for the AGS and Booster Rings during Accelerator Operations"](#).
- 7.2 [C-A OPM 4.44 "Operation of PASS"](#).

8. **Attachments**

None