

APPENDIX B

CBETA Search and Reset Procedures

11/08/2018

None of the areas associated with the CBETA accelerator operations are visible from the CBETA control room. These are:

- The CBETA accelerator perimeter region (five reset boxes and four light beam interlocked access points).
- The CBETA Laser Room (in L0E) – Discussed in the CLASSE -402 Document

Definitions:

- Operator will be defined to be the CBETA operator unless otherwise specified
- Accelerator will be defined to be the CBETA accelerator located in Wilson L0.E unless otherwise specified
- Keys will be defined to be the light beam interlock keys unless otherwise specified
- LBI – Light Beam Interlock

This document details the Search and Reset procedures for the CBETA accelerator. There are reset boxes that have been installed in each area of the accelerator. Six reset boxes must be reset and latched (by engaging the CBETA electronic light beam interlock key in the socket of the CBETA reset boxes) before any CBETA radiation producing equipment can be powered and the laser shutters can be opened. The entry into these areas without using an CBETA LBI key will break a perimeter interlock and break an area reset disabling the accelerator, and forcing the area to be searched and reset again prior to re-enabling the radiation producing equipment. The logic does not require that these reset boxes be set in any particular order.

Before enabling any High Voltage to the CBETA High Voltage Gun, these areas must have been searched and reset. This places CBETA perimeter in the restricted access state. In this state, the accelerator perimeter can be entered only by authorized staff with CBETA light beam keys (removal of the keys from storage location will also inhibit powering of radiation producing equipment, except in bypass mode).

To conduct an initial search and reset, the following procedure is to be used. Only an operator may conduct a search and reset of PPS interlocks. During the search each operator should check under and behind components in case a person may be unconscious or working beneath equipment. The route taken by the operator to search the area is explained below and shown in Figures 4-5.

1. Before beginning the search, it is necessary to hang the TWO ropes inside of the CBETA perimeter.
 - a. North Stairs rope
 - b. Beam Dump rope
2. The operator resets light beam interlocks via inserting the Reset Key into the Reset Switch and turning the Switch ON.
3. The operator removes a CBETA light beam interlock (LBI) key from storage.
4. The operator enters the perimeter via the SW Stairs lightbeam entrance using the CBETA LBI key to avoid breaking the LBI.

5. The operator now proceeds east along the mezzanine, until reaching the South Catwalk reset box. The operator should reset the box as they pass it.
6. The operator proceeds north, continuing to search for personnel.
7. After crossing the bridge to the north mezzanine, the operator should ensure that the rope is hung over the top of the north stairs, otherwise the search should be restarted. This prevents personnel from coming up the stairs behind the operator, possibly being missed during the search.
8. The operator then finishes searching the mezzanine, proceeding to the west. As they pass the North-Center Catwalk reset box, they should reset it.
9. The operator should then search the IOT mezzanine, and then proceed through the door into the north hallway, then to the east towards the stairs, searching each office on the way.
10. The operator then enters the first floor area, first proceeding east to the east hallway. The operator should search in this small area up to the beam dump, and then return west. The operator should verify that the Dump rope had been hung, otherwise the search must be restarted.
11. The operator should next go west into the electronics racks, and reset the North-Center reset box on the way by. After searching this area, all of the outer zone has been searched.
12. Next, the operator should proceed through the MLC shielding lightbeam using the CBETA LBI key, and then proceed east to search near the beam dump beamline and the splitter table.
13. After searching those areas, the operator may proceed west along the north side of the MLC, and then around the north side of the laser room, resetting the North-West reset box on the way by.
14. If the operator has appropriate laser training, they may enter while the laser room is locked. Otherwise, they should crash the laser room and enter it while it is unlocked and inhibited in order to search.
15. After searching the laser room, the operator proceeds south towards the SW labyrinth lightbeam, searching all areas near the gun and ICM.
16. After leaving the CBETA area by going through the lightbeam using the LBI key, the operator now needs to proceed back up the SW stairs lightbeam, and through the mezzanine that was previously searched.
17. The operator should continue along the mezzanine until reaching the central stairs leading into the middle of the CBETA ring. They should pass through this lightbeam using their LBI key.
18. The central area should be searched in a generally counter-clockwise sense, and as they pass near the Pump Skid reset box, they should reset it. They should end up at the small cross-over stairs on the south side of the ring.
19. The operator should cross these stairs and search to the east, all the way to the Dump reset box near the beam dump shielding.
20. After resetting the box, the operator may proceed back over the cross-over stairs, and then back out of the CBETA area using their LBI key. This completes the search.

The areas are now searched and reset and the operator can then proceed to the next step in the process of enabling the accelerator.

Search and Reset Routes for CBETA Operators

2nd Floor

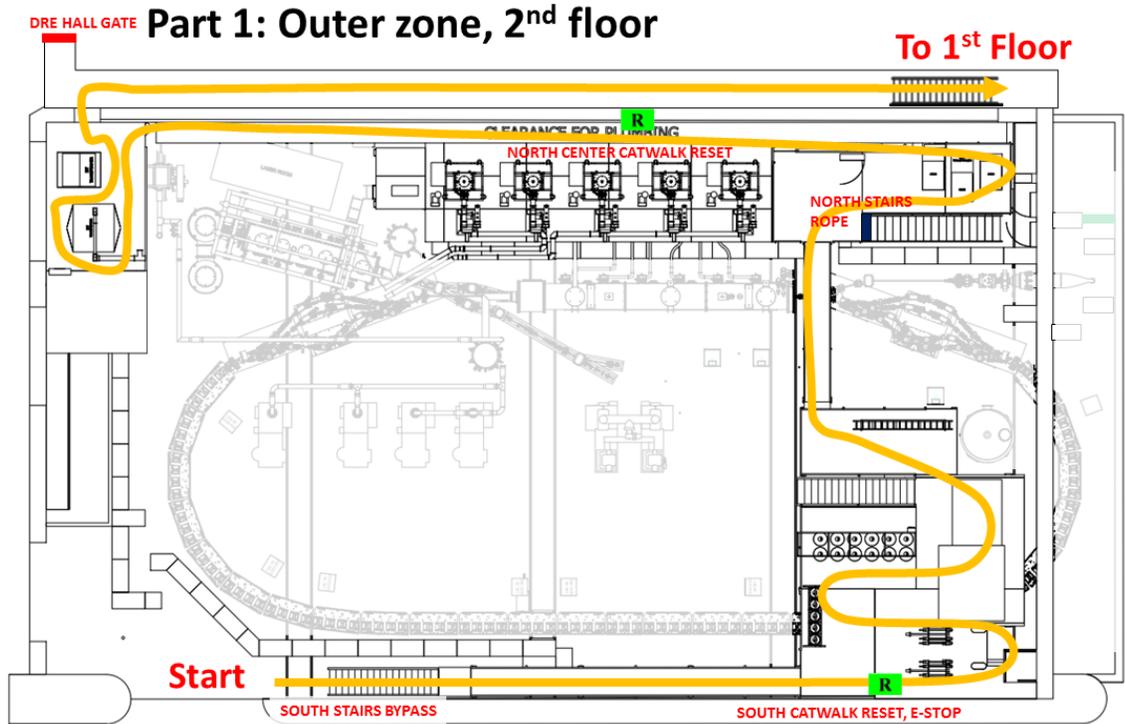


Figure 4 (a). First step of search route, searching the upper mezzanines.

1st Floor

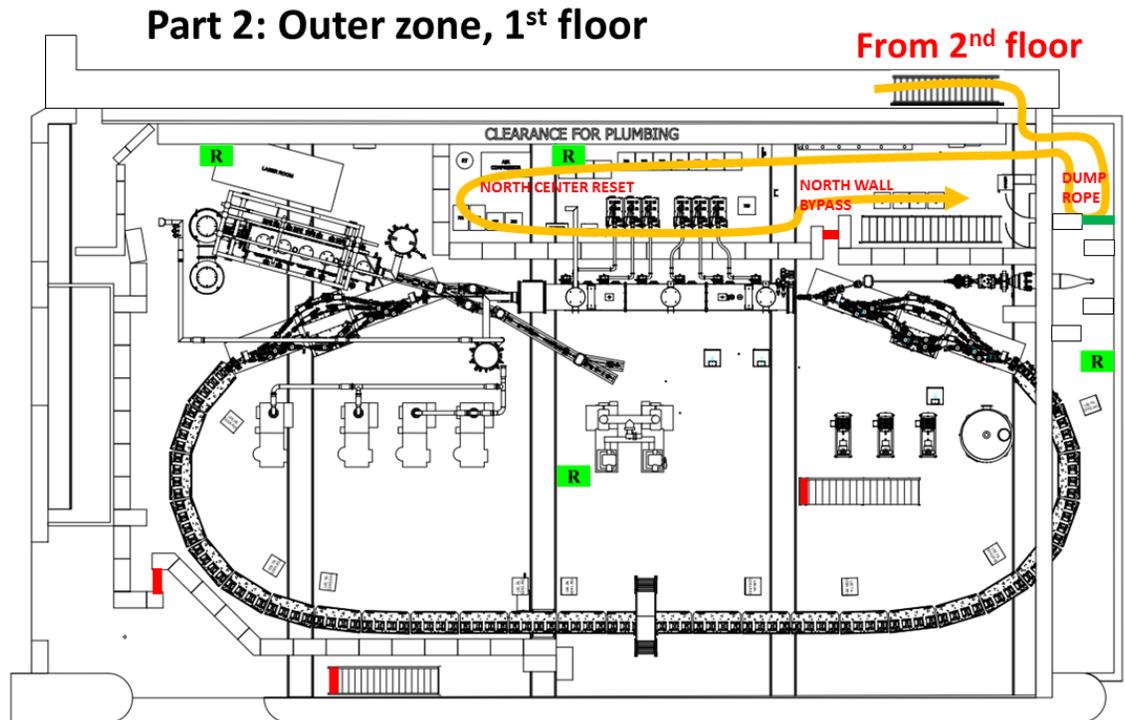


Figure 4 (b). Second step of search route, searching the NE corner of the 1st floor.

1st Floor

Part 3: Inner zone NW, Laser room

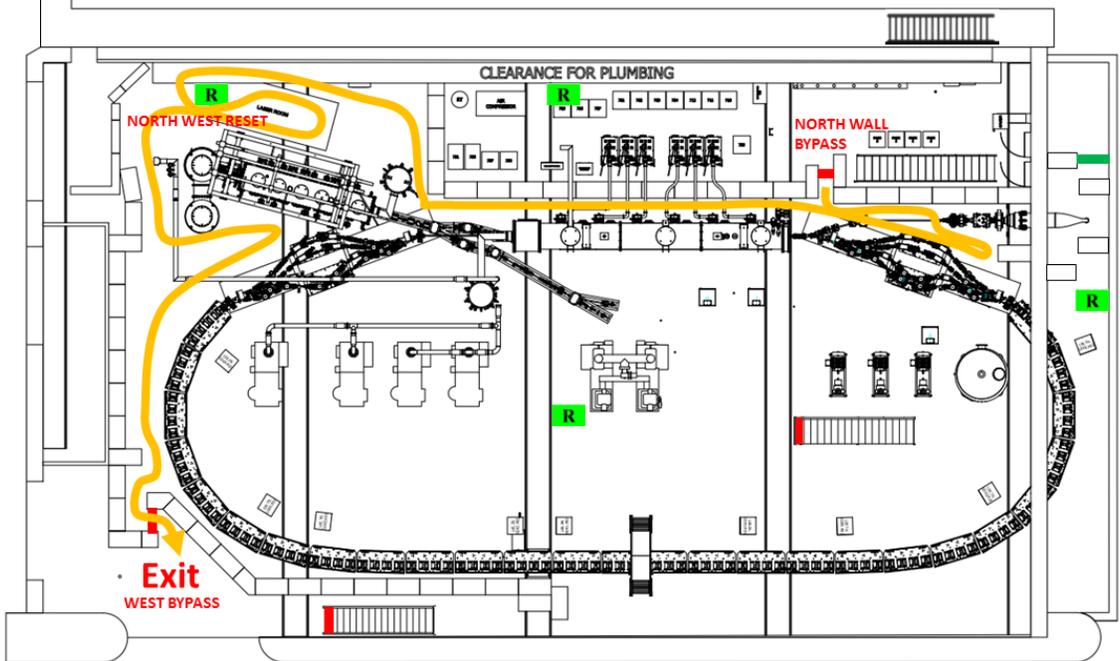


Figure 4 (c). Third step of search route, searching the north and west sides of the 1st floor.

1st Floor

Part 4: Inner zone central, SE

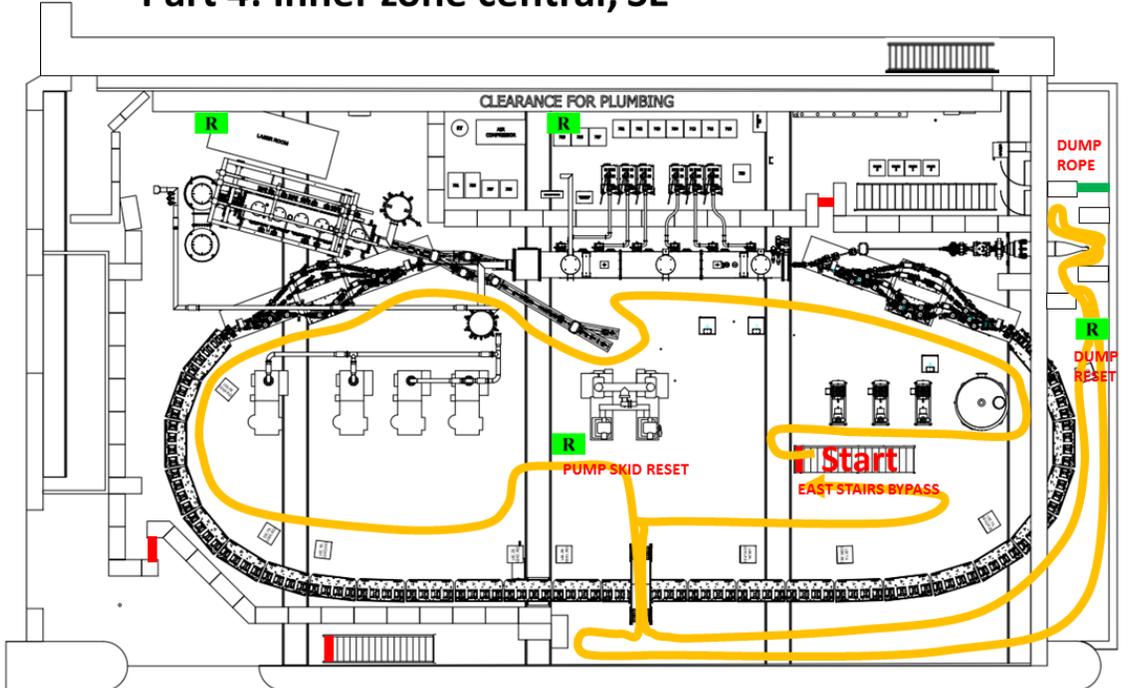


Figure 4 (d). Last step of the search route, searching the SE corner and ring interior.