

SAFETY PROCEDURE

The basic rules are laid down in paragraph 1 and 2. The switches are divided into two groups: (1) individual named switches for Cyclotron Group personnel and (2) A general row for Maintenance and visitors.

1. A safety switch must be closed by every person entering the pit (except as under (6)). The switch must be opened again on leaving the pit. No one must open a switch he did not previously close, except after the searching procedure in (3).
2. During a maintenance period, the unnamed safety switches are covered with at least one in the on position, and labelled "Maintenance Free Access". Members of the Cyclotron Group will continue to use their own switches.

3. After a Maintenance Period

No person may remove the "Maintenance" cover from the switches without carrying out the search procedure outlined as follows. At the end of the maintenance the person desiring to close the pit sounds the clearing bell for at least 2 periods of 5 seconds. He will then remove the "Maintenance" cover and clear any unnamed lights. On hearing this bell, anyone in the pit should come to the stairs within 30 seconds to make arrangements for leaving the pit, or otherwise make his presence known. If further time is required, each person remaining must put on a switch and the bell warning must be given again after that time. If no one appears after 30 secs. or, when the last person is assumed to have left the pit, the person closing up will thoroughly search the pit. If the pit is empty he will open any remaining safety switches, then close the pit, and start up the machine.

4. After an overnight shut down

The safety switches are to be put in operation immediately the pit is opened in the morning. The first time the pit is closed a warning must be given and the pit searched as in (3).

5. Restarting after a temporary break in the machine operation

The safety switches are in operation. If any switch is closed when someone wishes to close the pit, he sounds the clearing bell for 2 periods of 5 seconds and waits for 30 seconds. If this produces no response, he searches the pit, and if it is unoccupied he may then open the switch and close the pit.

6. Visiting Parties

If during the break a large party of visitors is taken into the pit it may happen that there are more visitors than available switches. The "Maintenance Free Access" cover should be put over the switches. Procedure as after "Maintenance" must follow before pit is closed; i.e., Bell Warning, followed by a search of the pit.

7. Through neglect of one or other of the above safety procedures it may happen that a person finds himself in the pit when the wiren is sounding, or even when the red lights on the safety boxes are intermittent. To protect himself he needs only to press the button on any one of the nine safety boxes or open the pit doors from the inside by drawing the bolt. This throws out the Master Relay and sounds a warning bell in the Control Room. The cyclotron will then be unable to come on again for at least twenty seconds.

8. If the Master Relay is tripped by a safety push button (thus also sounding the bell in Control Room) or the door opening, the operator must open pit and investigate.

9. Access to pit from 7.19 (Dog House)

Provision is made in 7.19 for "frigging" the door interlock to allow access without tripping the Cyclotron. The operator must be informed that access is required and he will "frig" from the Control Room. A button inside the cage will "frig" the door when returning. A switch on the panel inside the cage will switch off the ion source and prevent any beam coming down the tunnel. The Dog House should normally remain locked to prevent unauthorised entry.

DANGER WARNINGS

<u>INDICATION</u>	<u>MEANING</u>	<u>ACTION</u>
Bell sounding	It is desired to close the pit.	Come to door of pit within 30 seconds.
Red lamps alight on safety boxes.	Cyclotron ready for starting sequence.	None: Bell or Siren warning will be given.
Siren sounding	Pit is shut and Cyclotron can operate as soon as the siren stops (duration of note 20sec)	Press button in safety box, and contact the operator.
Red lamps flashing on safety boxes.	Cyclotron operating	Press button on safety box or get out of the pit either by the stairs or the escape hatch, whichever is the quicker.
Klaxon sounding	CO ₂ being discharged into the pit.	Get out of pit as quickly as possible.