

Prepared by: D. Raparia  
Date: November 05, 2008  
Reviewed by: *[Signature]* (RSCR)  
Date: 11/20/08  
Approved by: *[Signature]*  
(C-A Dept. Chair)  
Date: 11/21/08

### LINAC RADIATION SECURITY CHECK-OFF LIST

The Linac Tank 1 rf high voltage power supply is to be disabled using the lock-out key switch until the items below are completed. (The RFQ power supply or the ion source extractor power supply may be used as alternatives for high intensity lockout). Record date/time, person responsible for the lockout, and the tag number below.

\_\_\_\_\_ (Date/Time) \_\_\_\_\_ (LP)

\_\_\_\_\_ (Tag #) \_\_\_\_\_ (Date/Time Tag Removed)

\_\_\_\_ (ACG) Functional check of Linac/HEBT interlocks completed.

\_\_\_\_ (LP) Beam stops: LEBT BS-1, LEBT BS-2, HEBT NZ304, HEBT NZ225, LTB #1, LTB #2 in place and functioning.

\_\_\_\_ (LP) Gates inspected:  
a. Tank I gate  
b. HEBT plug door/sliding gate  
c. AGS-HEBT gate  
d. Tank 9 gate  
e. TTB gate  
f. BLIP tunnel gate  
g. REF tunnel

\_\_\_\_ (RCD) Signs in place at Gates:  
a. Tank I gate  
b. HEBT plug door/sliding gate  
c. AGS-HEBT gate  
d. Tank 9 gate  
e. TTB gate  
f. BLIP tunnel gate  
g. REF tunnel

\_\_\_ (LP) Chipmunks in place:

- a. BLIP Pump House (2)
- b. Linac lower equipment bay:
  - Tank 4/5 alcove
  - Tank 6 low energy transmission line penetration
  - Tank 6/7 intertank vacuum penetration
  - Tank 8/9 intertank vacuum penetration
  - Cable tray downstream of Tank 9
  - Tank 1 gate

\_\_\_ (IG) Functional checkout of chipmunks complete:

- a. BLIP Pump House (NM061 & NM065)
- b. Linac lower equipment bay:
  - Tank 4/5 alcove (NM063)
  - Tank 6 low energy transmission line penetration
  - Tank 6/7 intertank vacuum penetration
  - Tank 8/9 intertank vacuum penetration
  - Cable tray downstream of Tank 9 (NM062)
  - Tank 1 gate (NM068)

\_\_\_ (ACG) Following chipmunks tied in to security system, interlocking LEBT BS-1 & BS-2, and tested:

1. BLIP pump house chipmunks (NM061 & NM065)
2. Tank 4/5 alcove chipmunk (NM063)
3. Tank 1 gate (NM068)

\_\_\_ (WG) Check that the BLIP transport water pump house gate is locked.

\_\_\_ (RCD) BLIP pump house posted as a High Radiation Area.

\_\_\_ (RCD) Area around the BLIP pump house posted as a Radiation Area.

\_\_\_ (WG) Checklist for entry into the BLIP pumphouse posted on the pumphouse entrance.

\_\_\_ (LP) Check shielding of Linac Lower Equipment Bay.

\_\_\_ (LP) Check shielding of AGS-Linac interface

\_\_\_ (LP) Check shielding of TTB-Linac interface.

\_\_\_ (LP) Check shielding of TTB-Booster interface.

\_\_\_ (LP) Check shielding of Linac-Booster interface.

\_\_\_ (LP) Check shielding of BLIP tunnel-REF tunnel interface.

\_\_\_ (LP) BLIP locked off or BLIP Radiation Security Check-Off List completed.

\_\_\_ (BP) LTB RS LOTOed off.

\_\_\_ (LP) HEBT beam stops NZ 304 permanently in the beam, and red-tagged by a LP radiation security red tag.

\_\_\_ (LP) The Linac has been reviewed for compliance with the Operational Safety Limits as given in OPM 2.5.

\_\_\_ (ACG or RSCR) Interlocks removed from the two HEBT beam stops or acceptable condition by RSCR).

\_\_\_ (ASSC) Equipment protection for the HEBT beam stops approved.

\_\_\_ (LE) HEBT stop soil cap drawings complete.

\_\_\_ (LE) HEBT stop soil cap on the inspection list.

\_\_\_ (LP) HEBT stop NZ225 locked closed or the procedure to open the stop and been approved.

\_\_\_ (LP) Linac ready for beam.

\_\_\_ (OC) List completion verified by on duty operations coordinator.

When the above items are completed, the Linac may be unlocked for operation.

Following establishment of 200 MeV beam, the following should be completed before routine operation begins:

\_\_\_ (RCD) Tank 1 gate / LEPT area surveyed and properly posted.

\_\_\_ (RCD) Tank 1 gate/ LEPT are survey should be given to RSC chair to evaluate need of shield wall

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ACG C-A Access Controls Group (J. Reich or designate)  
BLP Liaison Physicist for BLIP (L. Mausner or designate)  
BP Liaison Physicist for the Booster (C. Cardner or designate)  
RCD Radiation Controls Division  
LP Liaison Physicist for the Linac (D. Raparia)  
OC Operations Coordinator  
RSCR Radiation Safety Committee Representative  
WG Water Group  
IG Instrumentation Group (R. Atkins or designate)  
ASSC Accelerator Safety Systems Committee Chair (J.W. Glenn or designate)

### Linac Chipmunks

NMON	Location	Security Trip	Dose Limit
61	946 Lin-Bster Beam Stop 1	50mR	10mR
62	Trench U/S Linac Plug	--	20mR
63	Tank 4/5 Alcove	20mR	16mR
65	946 Lin-Bster Beam Stop 2	50mR	10mR
68	Linac Tank 1	20mR	16mR