

Prepared by: D. Raparia
 Date: December 24, 2009
 Reviewed by: *[Signature]* (RSCC)
 Date: 12/28/09
 Approved by: *[Signature]*
 (C-A Dept. Chair)
 Date: 12/28/09

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.

____ (LP) Procedure for access to the Linac cavities while they are operating will be provided after initial startup.

____ (RSCC) The Linac can operate while the LPM review is being completed.

____ (LP) The LPM is not to be operated until the review of its radiation hazards is complete.

____ (LP) The Linac is 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 the Linac beam, the following should be completed before routine operation begins:

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

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. Gardner or designate)
RCD Radiation Controls Division
LP Liaison Physicist for the Linac (D. Raparia)
OC Operations Coordinator
RSCC Radiation Safety Committee Chair (or designate)
WG Water Group
IG Instrumentation Group (R. Atkins or designate)

Linac Chipmunks

NMON	Location	Security Trip	Alarm Level
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