

Booster Radiation Safety Check-Off List for
operation with **Protons from Linac**
during (or immediately following)
operation with Ions from Tandem

(For Booster operation with Linac protons beginning in March 2007)

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Protons from Linac may be injected and accelerated in Booster **only upon completion of this check-off list**. Before proceeding with the numbered check-off items, the LTB Beamstops must be **Inserted, Locked, and Tagged**. If necessary, equivalent devices and/or procedures may be substituted with appropriate LP and RSC approval.

The LTB Beamstop Lock and Tag are as follows:

_____ (LPB) LOTO Booster LTB Beamstop Enable Key (Bldg. 914):

Tag Number 6130

Lock Number 10L240

Person/Date: _____

The following items are to be initialed as complete:

1 Booster Operation Status

1. _____ (LPB) Radiation Safety Check-Off List for Booster operation with **Ions from Tandem** in effect.

2 Security System

1. _____ (ACG) Functional test of the High Intensity Source to ATR Interlock complete.
2. _____ (ACG) The B15 current transformer interlocks have been functionally tested.
3. _____ (B15SE) The B15 current transformer trip level has been set to 140 mA. This corresponds to 2.5×10^{12} protons in the AGS ring.
4. _____ (MCR) Procedure in place for the initial setup, calibration and periodic checking of the B15 current transformer.

3 Administrative Items

1. _____ (LPB) Procedure (OPM 2.5) which sets limits on losses at F6 Septum and B6 Dump reviewed.
2. _____ (LPB) Memo stating Booster Parameter Limits that are consistent with the Booster Operational Safety Limit in OPM 2.5 has been issued to MCR for required reading.
3. _____ (CME) Proton beam intensity limit established for B6 dump and given to MCR.

4 Booster Extraction to AGS

1. _____ (LPA) The AGS is ready to accept proton beam.

5 Booster Extraction to NSRL

Either Item 1 or Item 2 must be completed:

1. _____ (LPN) NSRL (R-line) is ready to accept beam.

OR

2. _____ (LPN) Booster Extraction to NSRL is LOTO:

Tag No. _____

Lock No. _____

Person/Date: _____

6 EBIS-LTB Fault Study

1. _____ (LPB) An approved fault study plan for the EBIS-LTB region is in place and ready to be executed.
2. _____ (RCD) A buffer zone around the penetration pipe opening in the Linac building is established. The zone is roped off and posted as a "Radiation Area" with the requirement that anyone entering the area be accompanied by a Radiation Control Technician monitoring the radiation levels. (The buffer zone may be eliminated only with permission from the RSC.)

_____ (LPB)

7 Verification and Permission

All of the above check-off items have been initialed as complete.

_____ (OC)

_____ (Date/Time) The RSC LOTO(s) that prevent Linac proton beams from entering the Booster may be removed. The LTB beamstop remote enable key (in Bldg. 914) may be inserted and turned (or equivalent devices enabled) to allow beam enable from the MCR.

_____ (LPB)

_____ (Date/Time)

Abbreviations

LPA = Liaison Physicist AGS (**Haixin Huang** or designee)
LPB = Liaison Physicist Booster (**Chris Gardner** or designee)
LPN = Liaison Physicist NSRL (**Adam Rusek** or designee)
LE = Liaison Engineer, ME (**George Mahler** or designee)
CME = Chief Mechanical Engineer, ME (**Joe Tuozzolo** or designee)
RSC = Radiation Safety Committee (**Dana Beavis** or designee)
ACG = Access Control Group (**Jonathan Reich** or designee)
RCD = Radiation Control Division (**Paul Bergh** or designee)
B15SE = B15 transformer System Engineer (**Michelle Wilinski** or designee)
MCR = Main Control Room
OC = Operations Coordinator