

BROOKHAVEN NATIONAL LABORATORY PHYSICS DEPARTMENT		Number: PO-P-ATF- 0003	Revision: 1
		Effective: 08/12/2004	Page 1 of 4
Subject: Procedure for Operation of the Accelerator Test Facility		Prepared by: Vitaly Yakimenko	
Reviewed by ES&H Coordinator: 	Approved by ATF Head: 	Approved by Department Chair: 	

Procedure for Operation of the Accelerator Test Facility

TURN ON PROCEDURE

1. Precautions and Limitations

Only persons trained as ATF Operator may follow this procedure. Failure to follow this procedure could endanger personnel by exposing them to γ -rays and neutrons produced by greater than 10 MeV electrons. For 5 MeV operations this same procedure shall be used. It is not possible to damage any of the equipment by operating at the maximum available level. No independent verification other than that provided by the computer is necessary. Emergency shutdown of the electron beam may be achieved by depressing any of the emergency stop buttons.

2. Turn On Procedure Check List

First section ("Gun, Linac, & H-line safety") of the ATF operation check list must be fully completed. Second section ("Experimental Hall Safety") of the check list must be completed if beam needs to be delivered to the experimental hall. Operations must be halted and the operation coordinator notified if items on the check list can not be completed (ex. Vacuum gauge controller is off or gate to controlled area is opened).

3. Photocathode-drive Laser

Nd:YAG (or other photocathode-drive) laser turn on can be performed by an ATF laser operator only. This turn on procedure shall be executed to prepare the laser for operation on the gun cathode. Laser turn on shall follow established procedures.

4. Securing the ATF Experimental Area

4.1 Introduction:

Since this is a primary radiation area it is protected by stopping the electron beam in either a fixed or movable beam stop situated in the high energy beam transport line just upstream of the experimental hall. Any attempt to enter the experimental hall when interlocked causes the movable beam stop to be inserted and also automatically turns off the power supplies on the klystron modulators. Dual electrical interlocks are provided on

Number: PO-P-ATF-0003	Revision: 1	Effective: 08/12/2004	Page 2 of 4
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both the electron beam stop and all the entry doors to the experimental area. The second independent electrical circuit will also turn off power to the modulators.

4.2 Security System Enable

Sign out the two keys (K27 and K28) that enable the Experimental Area Security System and insert them into the key box situated in the foyer outside the Experimental Area entry door which is adjacent to the Control Room. In order to operate the beam stop, it will also be necessary to sign out the two keys (K25 and K26, "Control Room Permit") and insert them in the Radiation Interlock panel in the Control Room.

4.3 Entry Procedure:

There are two doors that permit entry into the beamline area. One door is located adjacent to the Control Room, and the other at the FEL optics area. When entry is desired, call the Operator and request entry. The operator will press a button which closes the Electron Beam Stop, and then turns and removes a key (CR Permit) which ensures that it cannot be opened until a search is performed. Once in the beamline area a person may leave the area, searched or unsearched.

When it is desired to again run beam, the area must be searched by the operator, and the CR Permit key must be replaced and turned in the control room panel.

4.4 Search Procedure:

The beamline experimental area must be searched each time it is desired to run beam. Any persons found in the area will be asked to assemble near the exit door in use and to exit with the person executing the search. If anyone enters the area during the search process the search is automatically aborted and must be started again. There are two possible search routes, depending upon which door will be the exit door. Either of the prescribed routes starts inside the area near the door which is not to be the exit door. A total of four check station buttons must be pressed in sequence either in ascending or descending number order inside the area. Following this, the searcher will press a timed "exit button" allowing a short period of time to exit through the door and close it. Then the final "external" check station button must be pressed. If this is accomplished within the time allotted, the search is successfully completed. This can be confirmed by the activation of an audible alarm and "interlocked" sign illumination. The key must now be returned to the control room, inserted into its lock (CR Permit) and turned. This enables the beamstop controls, allowing the beamstop to be opened and closed from either the Control Room or the Laser Area.

TURN OFF PROCEDURE

1. Normal Turn Off Procedure

Accelerator Turn Off is done by following the "Turn Off" section in the check list. It must be fully completed, signed and dated.

Laser can be turned off by ATF laser, linac or duty operator by following established laser turn off procedures.

2. EMERGENCY TURN-OFF PROCEDURE

2.1 EMERGENCY BEAM TURN-OFF: PUSH ANY OF THE RED EMERGENCY STOP BUTTONS PROVIDED. THIS WILL TURN OFF THE MODULATORS PROVIDING R.F. TO THE SYSTEMS AND THE LASER(S) PROVIDING ELECTRONS.

2.2 Record emergency turn off date, time and reason for use in the ATF operations log book and sign.

CHECKLIST FOR OPERATING AT HIGH ENERGY IN BLDG 820 EXPERIMENTAL AREA

NOTE: Any misrepresentation on this checklist may be considered by BNL to be a serious infraction and an intentional noncompliance with 10CFR835.104, "Written Procedures".

– TURN ON PROCEDURE –

GUN, LINAC & H-LINE SAFETY												
Date (mm/dd/yy)												
Time (military 0000-2400hrs)												
Experiment name												
Rep rate (Hz)/ Pulse train												
RF levels at zero												
Reset radiation alarm panel												
L.E.B.T. gate closed/locked												
H.E.B.T. door closed/locked												
OPERATIONAL INFORMATION												
Linac water temp. °C												
Gun temp set point °C												
V A C U U M	Gun											
	Linac											
	H-line 1											
	H-line 2											
	Safety line											
	BL1											
	BL2											
	BL3											
Open valves (LV2/HV1/FV1)												
Modulators ON												
Signed												
EXP. HALL SAFETY												
Time (military 0000-2400hrs)												
Keys #25-28,29,37,40 checked												
Obtain security keys #25-28												
Attic hatch closed/locked												
Open all valves in the BL												
EH search & plug door												
Signed												

– TURN OFF PROCEDURE –

Date (mm/dd/yy)											
Time (military 0000-2400hrs)											
Set RF and magnets to zero											
Lock out AC to modulators											
Close pneumatic valves											
Close manual valves in BL											
Return keys & YAG laser off											
Signed											
Audit (ESH use only)											