

*If you are using a printed copy of this procedure, and not the on-screen version, then you **MUST** make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the **ESSHQ Procedures Coordinator, Bldg. 911A***

C-A OPERATIONS PROCEDURES MANUAL

15.10.2.2 Test EBIS High Voltage Platform Pulsing Supply: Platform Area Safety Sweep and Turn On / Turn Off Procedure (HVT-20061218)

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Hand Processed Changes

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Approved: \_\_\_\_\_ Signature on File \_\_\_\_\_  
Collider-Accelerator Department Chairman Date

E. Beebe

**15.10.2.2 Test EBIS High Voltage Platform Pulsing Supply: Platform Area Safety Sweep and Turn On / Turn Off Procedure (HVT-20061218)**

The purpose of this procedure is to assure that operation of the Test EBIS high voltage platform is performed in a safe manner with regard to both personnel and equipment. Control of the platform high voltage is made from outside the locked platform enclosure using a 0-2kV pulsed generated by the control power supply. A nominal 100kV oil filled pulse transformer resides within the enclosure and delivers the HV voltage to the platform through a coaxial (grounded shield) cable.

- A) Only personnel authorized in this procedure are allowed to *secure* the enclosed area for lockup and subsequent operation of the High Voltage Power Supply which energizes the Test EBIS (100kV) Platform. “**Securing**” the area means that the personnel and equipment safety sweeps, as well as overhead crane lock-off are performed, as outlined in the procedure(s) below.
- B) Each time the enclosure is secured for HV operation, a single “sweep leader”, authorized in these procedures, will be in charge of securing the area.
- C) A Kirk key system assures that the HV is not applied without locking the gated enclosure. It provides grounding of the platform by a Ross Relay while the enclosure gate is open and the platform HV supply is locked off.
- D) **Authorization is required to perform the safety sweep, to secure the gated enclosure for HV operation, and to operate the HV platform supply:**  
In order to become an *Authorized User* and use this procedure, personnel must be designated by J. Alessi or E. Beebe and read, sign and date this document below. The designator must initial the signature in the space provided to validate the authorization. A prerequisite for signing this procedure is reading and signing the following procedures:

“Interim Magnetic Field Safety Plan for EBTS (Test EBIS) Super Conducting Solenoid”, *and* “Procedure for Making the EBIS High Voltage Area Safe for Entry (HVP-20061130)”

### **Sweep Procedure:**

1. The Test EBIS platform shall be inspected for connections and adequate clearances between the platform and ground. All diagnostics shall have proper isolation from ground potentials within the enclosure and no objects should inadvertently protrude through the enclosure boundary or be placed too close to the boundary.
2. The “sweep leader” shall verbally issue an order for all other personnel to evacuate the enclosure in preparation for enclosure lockup and subsequent HV platform operation.
3. After the other personnel have left the enclosure, the sweep leader shall make a visual inspection for remaining personnel. The sweep leader must check the area behind the power supply racks first and then the more visible areas around the EBIS.
4. For the case in which only the permanent ground strap is in place, the ground stick shall be installed temporarily, at the designated location on the EBIS, to allow for safe removal of the ground strap.
5. If installed, remove safety ground strap from the EBIS platform, located at the base of the electron gun. The strap will remain attached to the laboratory ground plane and should be laid flat along the ground.
6. Remove the ground stick from the EBIS and place it in its designated location near the enclosure entrance.
7. Close the High Voltage fence gate and lock it using the Kirk key.

### **HV platform power supply “Turn On” procedure:**

8. Ensure that the **overhead crane is restrained and locked** to the pit railing at the North end of the laboratory so that it can not inadvertently approach the HV cage. The designated lock and warning take secured to the pit railing shall be used. **The crane must remain locked off** to prevent use while HV is applied to the EBIS platform.
9. Ensure that 2KV supply is set to zero, all input and output cables are properly connected.
10. Using the Kirk key, and proper PPE \*, throw the AC power switch to the high voltage power supply rack. This will energize the Ross shorting relay on the EBIS. stand, lifting the final safety ground. This will also turn on the H.V. warning lights.
11. Turn on power supply, note shorting relay in 2KV supply activates.
12. Turn on IGBT pulser.
13. Move “shorting relay” toggle on IGBT pulser to fully up position.
14. Set desired voltage on 2KV supply to run the pulser.

**\* PPE for Category 0+      Less than or equal 240 V      Less than or equal 225 A**

Non-melting, flammable natural materials (untreated 100% cotton, wool, rayon<sup>2</sup>, or silk, or blends of these materials with a fabric weight of at least 4.5 oz/yd<sup>2</sup>) long-sleeve shirt and long pants PLUS leather gloves and safety glasses with side shields. (Cal/cm<sup>2</sup> N/A).

**HV platform power supply “Turn Off” Procedure:**

1. Turn 2KV supply to zero.
2. Move “shorting relay” switch on IGBT pulser to lowest position, shorting relay will drop.
3. Using proper PPE, turn off AC power to the H.V. pulser rack by throwing the disconnect switch mounted on the side of the rack. The shorting relay in the power supply should short the power supply. The platform HV will go to zero.
4. Using Kirk key “A”, lock out the disconnect switch.
5. Use Kirk “A” to allow you to turn Kirk lock “A/B”. This will allow the HV shorting relay in the cage to drop, shorting the EBIS platform to ground. At this time the HV warning lights will go out and Kirk key “B” can be use for gate access.
6. The “Procedure for Making the EBIS High Voltage Area Safe for Entry”, should be followed by an authorized user when using Kirk key “B” to open the HV gate.

**\* PPE for Category 0+      Less than or equal 240 V      Less than or equal 225 A**

Non-melting, flammable natural materials (untreated 100% cotton, wool, rayon<sup>2</sup>, or silk, or blends of these materials with a fabric weight of at least 4.5 oz/yd<sup>2</sup>) long-sleeve shirt and long pants PLUS leather gloves and safety glasses with side shields. (Cal/cm<sup>2</sup> N/A).

**Authorized Personnel List (HVT-20061218):**  
(Test EBIS High Voltage Platform Pulsing Supply: Platform Area  
Safety Sweep and Turn on / Turn off Procedure)

Name: \_\_\_\_\_ Designator Initials: \_\_\_\_\_  
Signature \_\_\_\_\_ Date: \_\_\_\_\_  
Date \_\_\_\_\_

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