SOP

Procedure for Handling High Voltage Leads Associated with the -100kV Control System

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Estimated Time to Perform: 5 minutes

Procedure Overview

The design of the system allows safe handling of the leads which feed the Thermionic and Polarized sources. There are simple steps that can be followed which will totally isolate the leads and prevent the potential release of lethal energy. Once the leads are removed from the switch gear they are considered dead cables which may be handled accordingly. Although the cables are dead and the "gun" is safe, an added step has been developed which will be a visual indication of the safe mode. This visual indication is all that is required for trained workers to access the gun after it has been isolated from the high voltage system. The entire procedure can be accomplished without the need for OSHA lock-out/tag out. All manipulations are covered by administrative lock and tag and are considered to be configuration control. Workers involved in the manipulation must be trained on the system. Training records are maintained locally and on file.

Prerequisites

1. Obtain Crew Chief approval for configuration change to the high voltage system.
2. Injector must be in Controlled or Restricted Access.

Procedure Steps

1.0 Removing High Voltage Leads

1. Shut down -100kV system power supply.
   a. Open the main knife switch to the -100kV power supply.
   b. Remove the kirk key.

   NOTE: The knife switch cannot be moved without the kirk key. Physical possession of the kirk key is the same as physically holding the knife switch open, precluding inadvertent re-energization. This meets OSHA requirements.

2. Remove plexiglass cover to the -100kV output module.

   NOTE: This breaks an additional hardwire interlock which precludes energization.

3. Remove output lead to the correct gun.
   a. Touch the tip of the lead to the grounded chassis of the output module to ensure that cable capacitance has been fully discharged.
   b. Place a connector cover over the empty port.
4. Place the output lead into the receiver tube designed to accept the lead.
5. Place an administrative lock and tag over the connector barrel using a safety lockout box.
   a. The administrative tag should read: "-100kV SYSTEM CONFIGURATION CONTROL. MANIPULATION BY TRAINED PERSONNEL ONLY. CREW CHIEF PERMISSION REQUIRED"
6. Replace the plexiglass cover on the output module.
7. Return the kirk key to the main knife switch.
8. Close the knife switch.
9. The system may now be returned to operation.

   NOTE: Leave the key to the administrative lock inside the lock.

2.0 Additional Procedures for Tunnel Access and Work on High Voltage Section of the Polarized Source

1. Remove key from administrative lock upstairs.
   a. Bring that key downstairs.
2. Remove high voltage lead from the polarized source.
3. Place the lead into a receiving tube designed to accept the lead.
4. Put an administrative lock and tag over the connector barrel using a safety lockout box.
   a. The administrative tag should read: "-100kV SYSTEM CONFIGURATION CONTROL. MANIPULATION BY TRAINED PERSONNEL ONLY. CREW CHIEF PERMISSION REQUIRED"
5. Lock the key from the upstairs administrative lock into the hasp of the downstairs lock.

CAUTION: Do not remove the key from the downstairs administrative lock during work.

NOTE: Trained personnel working on the polarized source can look up and see that the cable has been removed and locked into the receiving tube. Without the -100kV feed cable, the gun is like any ordinary vacuum system.

3.0 Procedure for Finishing Work on High Voltage Section of the Polarized Source.

1. Unlock the key to the upstairs administrative lock from the downstairs administrative lock and remove the hasp.
2. Remove the downstairs lock from the safety lockout box.
3. Remove the high voltage lead from the receiving tube.
4. Return the high voltage lead to the polarized source. and secure the connector.
5. Bring the key for the administrative lock in the service building back upstairs.
6. Place the key back in the administrative lock in the service building.

   NOTE: The polarized source system is now ready for operation pending re-energization of the high voltage system.

4.0 Re-attaching High Voltage Leads

1. Open the main knife switch to the -100kV power supply.
2. Remove the kirk key.
3. Remove the plexiglass cover to the -100kV output module.
4. Remove the administrative lock and tag from the connector barrel of the high voltage lead.
5. Remove the output lead from the receiving tube.
6. Replace the output lead into the correct port of the output module.
   a. Remove the connector cover from the empty port.
   b. Insert the lead and secure the connector.
7. Replace the plexiglass cover to the output module.
8. Return the system to operational readiness.
   a. Insert the kirk key into the knife switch.
   b. Close the main knife switch.

   NOTE: The system is now returned to operational readiness.