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C-A OPERATIONS PROCEDURES MANUAL

15.9.5 Ferrite Test Procedure

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Hand Processed Changes

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Approved: _____ *Signature on File* _____
Collider-Accelerator Department Chairman Date

D. Lehn

15.9.5 Ferrite Test Procedure

1. Purpose

This procedure shall be used by a knowledgeable Technician or Engineer to perform high potential testing on Ferrite samples.

- 1.1 Such tests shall be performed at voltage levels below 60 kV and shall be done with a Velonix Pulsed Power Supply in the test facility in building 919. This test will help determine if a piece of Ferrite is good or defective.

2. Responsibilities

A Technical Supervisor or Engineer shall train the Technician using this procedure in the operation of the test facility. A signed and dated log (log book) shall be maintained. The dates of interlock testing shall be entered into the logbook. Affected personnel shall be notified when the test is being performed. The Technician operating this tester is responsible for careful inspection of the test setup prior to energizing. The technician performing the test shall ensure correct signage is in place during testing.

3. Prerequisites

- 3.1 Technicians performing their tests shall have been trained in this procedure. They shall have passed the following BNL/C-AD Safety courses:

Lock out/Tag out
Electrical Safety

- 3.2 Interlock Testing shall be performed and recorded periodically, use section 8.1 "Interlock Test Procedure". The date of testing shall appear in the logbook. The interlocks must be tested within 2 months of the current testing cycle.

4. Precautions

- 4.1 All affected persons shall be notified prior to the start of testing.
- 4.2 Appropriate PPE shall be worn during operations; safety glasses and nitrile gloves.

5. Procedure

5.1 TESTING

- 5.1.1 Confirm that the interlock testing is current.
- 5.1.2 Confirm that a ground is clamped to the output of the step up transformer.
- 5.1.3 After inspecting the Ferrite Tester, turn on the A/C power to the interlock

system, verify that the Velonix Pulsed Power Supply is off, the output cable, from the Velonix, is unplugged inside the lockbox, a lock is placed on the box (if necessary, as per standard LOTO requirements) and the shorting relay is shorted to Ground.

- 5.1.4 Enter the cage and place the Ferrite block, to be tested, in the stainless steel vessel, remove the Ground clamp and exit the area.
- 5.1.5 Close and latch the gate. Verify that the shorting relay, picks-up, and opens the path to Ground.
- 5.1.6 Remove the high voltage cable from the lock box and connect it to the Velonix supply. Turn on the Velonix supply by pushing the “Power” button. After waiting for the “HV ON/READY” button to illuminate, push this button.
- 5.1.7 Slowly increase the “Amplitude” pot until the desired voltage is met on the scope. After 5 minutes, the test is over. If the “OVERLOAD/RESET” button is illuminated, or the wave-shape on the scope is distorted, then the Ferrite is defective.
- 5.1.8 Slowly decrease the “Amplitude” pot until the voltage on the scope reads zero. Push the “HV ON/READY” button so that the “HV ON” is off and only the “READY” is on.
- 5.1.9 Open the lockbox and unplug the high voltage cable from the Velonix supply. Place the open connection points in the lock the box . Open the cage and make sure the shorting relay is closed (shorted to ground). Connect the ground clamp to the output of the step up transformer and replace the Ferrite block as required.
- 5.1.10 Remove the ground clamp.
- 5.1.11 Repeat steps 5.1.5 thru 5.1.10 as required.

5.2 END of USE LOCK-OUT PROCEDURE

- 5.2.1 Turn off the Velonix Pulsed Power Supply
- 5.2.2 Un-plug the High Voltage Cable from the lock-box.
- 5.2.3 Ground the stainless steel vessel.
- 5.2.4 Turn off the A/C interlock power.
- 5.2.5 Ensure appropriate signage is in place.

6. Documentation

None

7. **References**

None

8. **Attachments**

8.1 Interlock Test Procedure

Attachment 8.1
Interlock Test Procedure

1. Open the cage door to the Ferrite tester.
2. Watch that the shorting relay operates properly and the power supply cable is being shorted to ground.
3. Test an ohmmeter for proper operation.
4. Verify with the tested ohmmeter that the relay contacts go to ground.
5. Test the ohmmeter for proper operation.
6. Record the results in a logbook or data sheet attached to the cage door.