

FERMILAB GENERAL LOTO PROCEDURE

Perform the following steps before initiating work activity.

- NOTIFY** Notify affected employees, as necessary, of the impending shutdown.
- PREPARE** Understand the type, magnitude, hazards, and means and methods of controlling the energy involved.
- SHUTDOWN** Turn off or shutdown the machine or equipment using normal procedures.
- ISOLATE** Locate and operate the energy operating device to isolate the machine or equipment from the energy source.
- LOCKOUT and/or TAGOUT DEVICE APPLICATION** Apply RED lock and DANGER – DO NOT OPERATE tag to energy isolating device.
- VERIFY** Check by conclusive test that the source of energy has been isolated and that the machine or equipment is inoperable.

Perform work activity. When complete, perform the following steps for Return to Service.

- CHECK EQUIPMENT** Remove nonessential items and ensure that machine or equipment components are operationally intact.
- CHECK WORK AREA** Ensure that all employees are safely positioned or removed.
- VERIFY** Verify that machine or equipment controls are in safe or off position.
- REMOVE LOCKOUT and/or TAGOUT DEVICES** Locks and tags removed by employee(s) who placed them.
- NOTIFY** As appropriate and before the machine or equipment is started, notify affected employees that locks and tags have been removed.

The LOTO activity is now complete. Machine or equipment is ready for service.

FERMILAB WRITTEN LOTO PROCEDURE (EXAMPLE)

V100 C Magnet Power Supply at MI-60 North Equipment Gallery

Knowledgeable Employee _____ Department Head _____
Prepared By _____ Date _____ Approved By _____ Date _____

Reason for Written Procedure: Multiple Energy Sources and Past Failure of Capacitor Discharge Circuit

Perform the following steps before initiating work activity.

- NOTIFY** Notify Main Control Room (x3721) of the impending shutdown.
- PREPARE** 120 and 480 VAC electrical power sources to be isolated by circuit breakers. Prepare to check capacitor discharge circuit.
- SHUTDOWN**
 - Turn OFF Front Panel Controls
 - Turn OFF 480 VAC main breaker of PS and interior 120 VAC breaker.
- ISOLATE** Sourcing electrical panelboards are located at front and rear of power supply.
 - Turn OFF 300A 480 VAC Circuit Breaker #20 at SWBD-MI60-5A
 - Turn OFF 20A 120 VAC Circuit Breaker #15 at PP-MI60-4A-3A.
- LOCKOUT and/or TAGOUT DEVICE APPLICATION** Apply locks and tags to above breakers.
- VERIFY** Attempt to turn the power supply ON by use of normal front panel controls. Test the adequately rated voltage testing device for proper operation before use. The voltage testing activity of supply conductors has a Hazard/Risk Category of 2 and requires protective clothing with a minimum rating of 8 cal/cm². Check line side of the two power supply breakers in the power supply with a voltage meter to verify that ungrounded conductors are de-energized. Test voltage testing device for proper operation after use.
- CHECK C12 CAPACITOR** Interior capacitor C12 normally operates at 100 VDC with a 10K ohm 1W discharge resistor across it. The resistor is prone to failure. Inspect the resistor for damage and measure the voltage across C12. Voltage should be less than 1 VDC.

Perform work activity. When complete, perform the following steps for Return to Service.

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- CHECK EQUIPMENT** Remove all tools from interior of PS. Close and secure doors to PS.
- CHECK WORK AREA** Ensure that all employees are safely positioned or removed.
- VERIFY** Verify that the power supply's controls are in the OFF position.
- REMOVE LOCKOUT and/or TAGOUT DEVICES** Remove locks and tags from sourcing breakers and turn breakers ON.
- NOTIFY**
 - Notify the MCR (x3721) that the work on E:V100 is complete and that locks and tags have been removed.
 - Ask the MCR Crew Chief if the power supply should be turned on and enabled locally.

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TRAINED AUTHORIZED EMPLOYEES

The following employees, including those listed under the Periodic Inspection, have been trained in this procedure and are authorized to use it. Include date of training or re-certification.

PERIODIC INSPECTION

Written Procedure Review

Knowledgeable Employee Date

Procedure Performance Review

Performed By Date

Authorized Employees Included: