

ACCELERATOR DIVISION ES&H PROCEDURE

ADSP-10-0003

SAFETY SYSTEM INTERLOCK REQUEST PROCEDURE

RESPONSIBLE DEPARTMENT AD / ES&H

PREPARED BY  DATE 4-6-15  
AD/ES&H Department Head

REVIEWED BY  DATE 4-6-15  
Accelerator Division Deputy Head

APPROVED BY  DATE 4/6/15  
Accelerator Division Head

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1.0 PURPOSE AND SCOPE

The purpose of this procedure is to establish and define the Fermilab Accelerator Division roles, responsibilities, and requirements for the connection of devices, primarily power supplies, to the beamline electrical safety interlock system.

The provisions of this procedure apply to each occurrence of requesting a device to be connected to the safety interlock systems.

2.0 RESPONSIBILITIES

2.1 ACCELERATOR DIVISION HEAD

The Accelerator Division Head is responsible for:

- a. Approving this procedure.

2.2 AD ES&H DEPARTMENT HEAD

The AD ES&H Department Head is responsible for:

- a. Developing this procedure; and
- b. Reviewing and approving requests for connecting devices to the interlock system.

2.3 AD ES&H DEPARTMENT INTERLOCK ENGINEER

The AD ES&H Department Interlock Engineer is responsible for:

- a. Coordinating the interlocking of devices to the beamline electrical safety system.

2.4 REQUESTOR

The requestor is responsible for:

- a. Completing a Power Supply Interlock Request form, Appendix 1, printed on blue paper, for each device to be connected to the safety system;
- b. Having the request reviewed and approved by the Beamline Physicist;
- c. Submitting the request to the AD ESH Department Head;
- d. Assisting in connecting the device to the electrical safety interlock system; and
- e. Assisting with testing the device upon completion of the interlock connection.

2.5 BEAMLINE PHYSICIST

The beamline physicist is responsible for:

- a. Reviewing and approving Power Supply Interlock Requests to verify the device Acnet name, identified enclosure electrical safety system, device location, device description, load location, and load description information is correct.

2.6 INTERLOCK GROUP

The Interlock Group is responsible for:

- a. Connecting the interlock cable inside the SSIU;
- b. Verifying the device is controlled by the electrical safety system;
- c. Document the completion of the interlock request and testing of the device in the safety system electronic log;
- d. Added the device to the Power Supply Database identifying the ACNET name is connected to a specific SSIU and SSIU slot number;
- e. Retain the original blue Power Supply Interlock Request form in accordance with the laboratory records retention requirements; and
- f. Have the completed form independently reviewed by a member of the interlock group for accuracy.

3.0 INSTRUCTIONS

3.1 PREPARATION OF POWER SUPPLY INTERLOCK REQUEST FORMS

The requestor shall obtain a Power Supply Interlock Request form from the Interlock Engineer or designee. This form is color coded blue to identify the original.

The requestor shall complete the top half of the form down to the Safety Officer Use section. The information needed is requestor contact information, the date the interlock connection is desired, the device Acnet name, the electrical safety interlock system the device is to be interlocked to, the device location, a description of the device, the load location, a description of the load, and identification of any written Lock Out Tag Out (LOTO) procedures for the device or load.

The requestor needs to have the above information reviewed and approved by the Beamline Physicist to verify all information is correct before requesting the interlock connection.

The requestor will need to verify the power supply is connected to the correct magnetic load and label the enclosure loads and device with the LOTO information in accordance with Accelerator Division

Safety Procedure ADSP-05-0400, *Electrical Safety* and identify the date the labeling was completed on the form.

The requestor shall identify the interlock signal voltage and current on the form. Note that voltages over 50 volts are not allowed for the interlock signal.

The completed form is to be turned into the AD ESH Department Head or designee for approval of the request.

Any corrections on the form needs to be dated and initialed by the person making the correction. If the form has already been reviewed and approved by the beamline physicist, the beamline physicist will need to approve the correction.

### 3.2 CONNECTION OF DEVICE TO THE ELECTRICAL SAFETY SYSTEM

The requestor shall obtain blue 2 conductor cable from the Interlock Group for the interlock signal. The requestor shall have the cable installed in accordance with the National Electrical Code from the power supply to the designated Safety System Interface Unit (SSIU) identified by the Interlock Group.

The requestor shall label both ends of the cable with the device ACNET name and affix a Safety System Cable Label obtained from the Interlock Group to the device side of the cable. The label identifies the cable as a safety system controlled device that is under configuration management.

The requestor shall install the cable to the interlock connection in the device. The Interlock Group will connect the cable in the SSIU. Upon completion of the interlock connection, the requestor shall assist with verifying the device is controlled by the electrical safety system.

### 3.3 DOCUMENTATING DEVICE CONNECTION TO THE ELECTRICAL SAFETY SYSTEM

The interlock Group shall document the completion of the interlock request and testing of the device in the safety system electronic log. The device connection is to be added to the Power Supply Database identifying the ACNET name is connected to a specific SSIU and SSIU slot number. The Interlock Group shall retain the original blue Power Supply Interlock Request form in accordance with the laboratory records retention requirements.

Upon completion of the Power Supply Interlock Request, the form shall be independently reviewed by a member of the interlock group for accuracy.

### 4.0 EXTRA DIVISIONAL DISTRIBUTION

An electronic controlled copy of this procedure is maintained on the AD ESH Department website at:

[http://ad-esh.fnal.gov/ad\\_adsp.html](http://ad-esh.fnal.gov/ad_adsp.html)

## Accelerator Division Safety System Power Supply Interlock Request

1. Requestor completes one form per device. See ADSP-10-0003 for additional instructions.
2. Beamline Physicist review and approve of request.
3. Obtain blue 2 conductor #18 AWG cable from the Interlock Group and install. Location of the safety system power supply interlock unit can be obtained from the interlock group.
4. Obtain safety system cable labels from the Interlock Group and affix to the device end of interlock cable.
5. Affix a label with the ACNET database name of the device to both ends of the interlock cable.
6. Submit form to the AD ESH Department Head for approval.

**Requestor** \_\_\_\_\_ **Ext.** \_\_\_\_\_

**Date** \_\_\_\_\_ **Date Needed** \_\_\_\_\_

**Acnet Name** <sup>1</sup> \_\_\_\_\_ **Electrical Safety System** <sup>2</sup> \_\_\_\_\_

**Supply Location** \_\_\_\_\_ **Supply Description** <sup>3</sup> \_\_\_\_\_

**Load Location** <sup>4</sup> \_\_\_\_\_ **Load Description** \_\_\_\_\_

**Beamline Physicist review and approval** \_\_\_\_\_ **Date** \_\_\_\_\_

**Written LOTO Procedure:**

**Supply** \_\_\_\_\_ **Load** \_\_\_\_\_

**Verification of Power Supply to magnet connections.** <sup>5</sup> **Date:** \_\_\_\_\_

**Label of Lockout Device and Location applied to each magnet and Power Supply.** <sup>6</sup> **Date:** \_\_\_\_\_

**Interlock Voltage and Current** <sup>7</sup> \_\_\_\_\_

<sup>1</sup> Name must be the complete ACNET database name used by the MCR. (i.e. M:HV202, D:Q919)

<sup>2</sup> Indicate the enclosure(s) where the electrical hazard exists. (Transfer Hall and A Sector)

**Note: ACNET Name may not indicate the enclosure where the hazard exists.**

<sup>3</sup> A brief description indicating configured maximum voltage, and current and any other useful information for the installation.

<sup>4</sup> Indicate the location in the enclosure(s) where the electrical hazard exists.

<sup>5</sup> Verify that power supply cables are connected to the correct magnet load.

<sup>6</sup> As described in the AD/ESH Electrical Safety Procedure ADSP-05-0400 Section 3.

<sup>7</sup> Description indicating the voltage and current sent through the interlock unit. **No voltages over 50v are allowed.**

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Safety Officer Use

**Authorization** \_\_\_\_\_ **Date** \_\_\_\_\_

AD ESH Department Head

**Comments** \_\_\_\_\_

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Interlock Group Use

**Interlocked by:** \_\_\_\_\_ **Date** \_\_\_\_\_

**Unit Number** \_\_\_\_\_ **Slot Number** \_\_\_\_\_

**Recorded in Database by:** \_\_\_\_\_ **Date** \_\_\_\_\_

**Added to Lock Out List by:** \_\_\_\_\_ **Date** \_\_\_\_\_

**P.S. Test & Logbook by:** \_\_\_\_\_ **Date** \_\_\_\_\_

**Interlock Work Review by:** \_\_\_\_\_ **Date** \_\_\_\_\_

CONTROLLED DOCUMENT

Users are responsible for ensuring they work to the latest approved version. Printed or electronically transmitted copies are uncontrolled.