

ACCELERATOR DIVISION ES&H PROCEDURE

ADSP-05-1211

MASTER SUBSTATION FEEDER 23
13.8 KV LOCKOUT/TAGOUT PROCEDURE

RESPONSIBLE DEPARTMENT ES&H

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DATE 1-11-12

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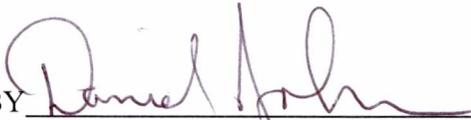
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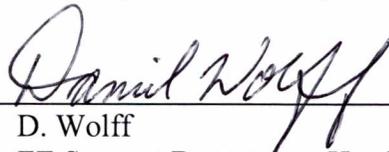
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1.0 PURPOSE AND SCOPE

The purpose of this Accelerator Division Safety Procedure (ADSP) is to outline and detail the conduct of LOCKOUT/TAGOUT (LOTO) for Group Lockout of the Feeder 23 pulsed power 13.8 KV switchgear at the Master Substation.

2.0 PERFORMANCE OF MAINTENANCE ACTIVITIES

During maintenance/repair activities of the accelerator, the 13.8 KVAC pulsed power feeder system at the Master Substation needs to be locked out. The positive control point for Lockout/Tagout is at the Master Substation which is a limited access area. It would be impractical for every individual performing maintenance on those components to perform Lockout/Tagout at the limited access Master Substation. Therefore, Group Lockout by a Lead Authorized Person is necessary.

3.0 THE NECESSITY OF WRITTEN LOTO PROCEDURE

The reason for this written LOTO procedure is due to the necessity to lock out an energy source in an area in which access is restricted to authorized personnel only. After the feeder is properly locked out, other procedures will be implemented to detail how these lockouts will be utilized to protect personnel for entry in given enclosures.

4.0 RESPONSIBILITIES

4.1 OPERATIONS DEPARTMENT HEAD

The Operations Department Head shall develop and maintain a list of Lead Authorized Personnel and coordinate their training.

In addition, the Operations Department Head will ensure that the Lead Authorized Personnel implementing this procedure utilize an appropriate lockout form which is developed and maintained by the Operations and ES&H Department and approved by the AD Senior Safety Officer prior to use.

4.2 LEAD AUTHORIZED PERSONNEL

The role of the Lead Authorized Person is to properly Lockout/Tagout the switch which de-energizes 13.8 KVAC Feeder 23 at the Master Substation. The completion of the Lockout/Tagout is to be documented using a lockout form developed and maintained by the Operations and ES&H Departments and approved by the AD Senior Safety Officer.

Other procedures will be implemented to detail how this lockout will be utilized to protect personnel for access to given beamline enclosures.

The Lead Authorized Person shall carry the approved lockout form and each applicable step shall be checked off as they are performed. A copy of the

completed form shall be placed in the Main Control Room (MCR) e-log. Completed original forms shall be maintained for one calendar year.

The Lead Authorized Personnel shall be from the Accelerator Operations Department who are authorized in writing by the Operations Department Head.

Authorized employees who have the necessary knowledge and current training for General Lockout/Tagout shall conduct lockout of the Group Lock Box.

5.0 THE STEPS OF LOCKOUT/TAGOUT PRIOR TO MAINTENANCE ACTIVITY

Upon desiring to perform LOTO on Feeder 23, the MCR Crew Chief shall designate a Lead Authorized Person from a list of such named personnel maintained by the Operations Department Head.

5.1 **Prepare:** The Lead Authorized Person shall review this written procedure if necessary and obtain a copy of the approved lockout form. (Copies will be kept in a lockout binder on the Duty Assistant's desk.)

5.2 **Notify:** Notification shall be given to personnel deemed appropriate by the MCR Crew Chief. In particular, the Duty Electrician shall be notified that LOTO is to be performed.

5.3 **Shut Down:** The Lead Authorized Person shall check that the Tevatron ramps are dumped and Vacuum Circuit Breakers have been opened. He/she shall also check that the Low Beta supplies are turned off.

The Lead Authorized Person shall proceed to the Master Substation and meet the Duty Electrician. A minimum distance of ten feet must be maintained from the disconnect while the duty electrician opens Feeder 23. The Lead Authorized Person shall ask the Duty Electrician to open Feeder 23 by using the Circuit Breaker Control Switch and **verify** the expected action occurred by observing the status lights on the Circuit Breaker Control Panel as indicated on the approved lockout form.

Note: **If the expected actions are not verified on the Circuit Breaker Control Panel, High Voltage Duty Personnel must be called in to diagnose the failure before the lockout can proceed.**

5.4 **Verify:** The Lead Authorized Person shall proceed with the Duty Electrician to the Feeder 23 motor driven disconnect and verify that the indicator shows "Open" and all three switch blades in the feeder cabinet are in the "Open" position (Must be visually verified, take a flashlight). The Lead Authorized Person shall indicate on the approved lockout form the accomplishment of this step.

Note: If the motor driven disconnects do not indicate "open" the Duty Electrician can manually operate the disconnect after notifying the High Voltage Duty Officer. If the switch blades do not open, the procedure must be halted and alternative measures taken for lockout after consultation with the Accelerator Division Senior Safety Officer and a High Voltage supervisor from Facility Engineering Services Section.

5.5 **Lock and Tag Out:** The Lead Authorized Person shall remove the Kirk key from the motor driven disconnect which locks the actuator and thus prevents operation. The Kirk key can only be removed when the disconnect is in the "Open" position. The Lead Authorized Person shall return the Kirk key to the MCR and place the Kirk key in the Feeder 23 Kirk Key Transfer Block and turn, releasing the three transfer keys ("Tev Enclosure TEV Feeder 23", "F-Sector TEV Feeder 23" and "Transferhall TEV Feeder 23"). The "Tev Enclosure TEV Feeder 23" key shall be placed in the Tev Group Lockbox, the "F-Sector TEV Feeder 23" key shall be placed in the F-Sector Group Lockbox and the "Transferhall TEV Feeder 23" key shall be placed in the Transferhall Group Lockbox. The Lead Authorized Person shall attach BT-5 padlocks (MCR Crew Chief Lock) to each lockout box. A copy of the completed lockout form shall be entered into the MCR E-log.

6.0 SPECIAL REQUIREMENTS FOR SHIFT/PERSONNEL CHANGE

If the maintenance continues beyond a shift, the next MCR Crew Chief assumes the responsibility and authority of the off-going MCR Crew Chief for this group lockout.

7.0 THE STEPS FOR RETURN TO SERVICE

The MCR Crew Chief or Lead Authorized Person must coordinate the following steps prior to returning the equipment to service after service or maintenance activity.

7.1 **Check Equipment:** Check the MCR lock box and ensure that all personnel have removed their locks and tags.

7.2 **Check Work Area:** Check that the Tevatron tunnel including A-E, F and Transferhall Sectors are secure and all keys are returned.

7.3 **Notify:** The MCR Crew Chief or Lead Authorized Person shall notify the duty electrician that they are ready to reenergize.

7.4 **Remove Padlocks and Reenergize:** The MCR Crew Chief or Lead Authorized Person shall remove the Crew Chief locks from the group lockboxes and return the transfer keys to the Kirk key transfer block for Feeder 23. The Feeder 23 Kirk Key can then be turned and the key released.

The Crew Chief shall then designate a Lead Authorized Person to take the 13.8 KV Feeder 23 motor driven disconnect Kirk Key to the Master Substation.

Upon arrival at the Master Substation, the Lead Authorized Person along with the duty electrician shall proceed to the motor driven disconnect. The Lead Authorized Person shall insert the Kirk Key and turn it to allow operation of the disconnect. A minimum distance of ten feet must be maintained from the duty electrician while he energizes Feeder 23. The Lead Authorized Person shall ask the duty electrician to energize Feeder 23.

This completes the requirements for returning the equipment to service.

8.0 **PROCEDURE TRAINING REQUIREMENTS**

Initial training shall be coordinated by the Operations Department Head. The time interval for re-qualification will be every year in accordance with Laboratory procedures.

9.0 **DISTRIBUTION**

An electronic controlled copy of this procedure is maintained on the ESH Department website at:
<http://www-bdnew.fnal.gov/esh/adsp/index.html>