

ACCELERATOR DIVISION ES&H PROCEDURE

ADSP-05-1213

ALTERNATE LOCKOUT TO FEEDER 23  
LOCKOUT/TAGOUT PROCEDURE

RESPONSIBLE DEPARTMENT ES&H

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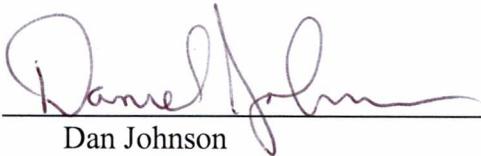
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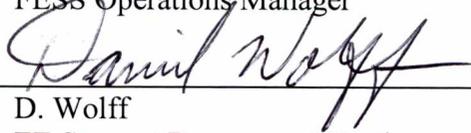
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## 1.0 PURPOSE AND SCOPE

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 individual transformer and load sites rather than at the main switchgear located at the master substation.

## 2.0 PERFORMANCE OF MAINTENANCE ACTIVITIES

During certain maintenance/operational activities it may be necessary to energize the Tevatron Pulsed Power Feeders (Feeder 23) while allowing access to the TEV enclosure. Under these conditions it is necessary to lockout the power feed for the power supplies. The positive control point for Lockout/Tagout is at the individual disconnects and switchgear attached to the pulsed power feeders. It would be impractical for every individual performing maintenance on those components to perform Lockout/Tagout at the numerous supplies located over the 4 mile circumference of the Tevatron tunnel. 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.

## 4.0 RESPONSIBILITIES

### 4.1 LEAD AUTHORIZED PERSONNEL

The role of the Lead Authorized Person is to properly Lockout/Tagout the individual breakers/switchgear of the supplies connected to the pulsed power feeder systems and document the lockout using the form provided. The keys used for the lockouts shall be treated in the same manner as the Feeder 23 key used in ADSP-05-1211.

The Lead Authorized Person shall carry the approved lockout form and each applicable step shall be checked off as they are performed. Since the number of supplies is extensive, a second person (The AD Safety Officer or designee) shall accompany the Lead Authorized Person and provide a second verification of the lockout. 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.

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 individual loads connected to Feeder 23, the AD Safety Officer or designee shall be contacted who will find a knowledgeable Lead Authorized Person who is familiar with the loads connected to Feeder 23.

5.1 **Prepare:** The Lead Authorized Person shall review this written procedure if necessary and obtain a copy of the approved lockout form.

5.2 **Notify:** Notification shall be given to personnel deemed appropriate by the MCR Crew Chief.

5.3 **Shut Down:** The Lead Authorized Person shall check that ADSP-05-1211 has been executed. The Lead Authorized Person shall attach a lock and tag to at least one of the group lock boxes in the MCR containing the 13.8 KV Kirk Disconnect key. If the TEV enclosures are secure and the 13.8 KV is already energized, this step is not required. Instead the Lead Authorized Person shall request that all Tevatron Pulsed and Lo-Beta supplies be turned off.

5.4 **Lock and Tag Out:** If ADSP-05-1211 has not been executed, operation of the disconnects in this step are an NFPA 70E Class 2 activity requiring safety glasses or goggles, non-melting or untreated natural fiber long sleeve shirt and long pants, FR coverall, hard hat, face shield, hearing protection, leather gloves, leather work shoes and FR rated jacket or rainwear as required. The Lead Authorized Person shall open all of the disconnects/breakers listed in Attachment 1. After the disconnect/breaker is open, the Lead Authorized Person shall lock and danger tag the disconnect/breaker in the open position. After the lockout list is completed, all keys for the locks shall be returned to the MCR where the lead authorized Person will lock the keys up in a group job box provided by the MCR. The MCR can then place three single keyed padlocks on this group box and treat the keys the same as the F-Sector, Feeder 23, Transferhall TEV Feeder 23 and TeV Enclosure TEV Feeder 23 keys.

5.5 **Verify:** The Lead Authorized Person and AD Safety Officer (or designee) shall visually verify all three switch blades in each feeder cabinet are in the **“Open”** position (**take a flashlight**) for each disconnect and breakers have been locked out for the Lo-Beta Power Supplies. The Lead Authorized Person and AD Safety Officer (or Designee) shall indicate on Attachment 1 the verification.

5.6 The equipment is now locked out and tagged out. The MCR can now treat these keys as the Lockout/Tagout equivalent of the Pulsed Power Feeder 23 keys and allow personnel into the Tevatron tunnel by locking the group lockbox. The MCR may now energized Feeder 23.

6.0 SPECIAL REQUIREMENTS FOR SHIFT/PERSONNEL CHANGE

If there will be a shift/personnel change that makes it necessary to transfer control of the lockout, the Lead Authorized Person shall walk the oncoming shift/personnel through the steps taken and turn over control of the MCR lockbox after the oncoming person(s) has conducted their own independent verification.

7.0 THE STEPS FOR RETURN TO SERVICE

The Lead Authorized person must perform the following steps prior to returning the equipment to service after service or maintenance activity. The purpose of these steps is to restore the configuration of the locks and tags such that the procedure ADSP-05-1211 becomes the controlling procedure. After ADSP-05-1211 has been executed, or the Tevatron tunnel secured, the power supplies and disconnects locked out by this procedure are no longer needed to protect personnel for access to the Tevatron tunnel. Under that condition, it is permissible for the Lead Authorized person to allow another person to remove locks and tags per step 7.4.

7.1 **Check Equipment:** Check the MCR lock box and ensure that all personnel have removed their locks and tags. Have the MCR Crew Chief lockout the pulsed power feeders using ADSP-05-1211.

7.2 **Check Work Area:** Check the Tevatron transformers and Lo-Beta supplies to ensure that they are ready to be unlocked. Any equipment not ready to be energized must be individually locked out by the responsible party.

7.3 **Notify:** The Lead Authorized Person shall notify the MCR Crew Chief of the change from individual breaker/disconnect lockout to the feeder lockout system.

7.4 **Remove Padlocks and Tags and Reenergize:** If ADSP-05-1211 has not been executed, operation of the disconnects in this step are an NFPA 70E Class 2 activity requiring safety glasses or goggles, non-melting or untreated natural fiber long sleeve shirt and long pants, FR coverall, hard hat, face shield, hearing protection, leather gloves, leather work shoes and FR rated jacket or rainwear as required. The Lead Authorized Person shall remove the locks and tags on the breakers/disconnects and re-energize them.

**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.

Attachment 1

Tevatron 13.8 KV Individual  
Disconnect/Breaker Lockout Form

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_  
Lead Authorized Person

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_  
AD Safety Officer (or designee)

The Lead Authorized Person and AD Safety Officer (or designee) shall verify all three switch blades in each feeder cabinet are in the **“Open”** position (**Must be visually verified, take a flashlight**) and the Low Beta Power Supplies are locked out.

<u>Verified</u>	<u>Location</u>	<u>Functional Name</u>
_____	A2	Tev Magnet Bus P.S. A2
_____	A3	Tev Magnet Bus P.S. A3
_____	B0	Lo Beta P.S. Q2-4
_____	B0	Lo Beta P.S. Q3
_____	B0	Lo Beta P.S. Q5
_____	B0	Lo Beta P.S. Q6
_____	B2	Tev Magnet Bus P.S. B2
_____	B3	Tev Magnet Bus P.S. B3
_____	C2	Tev Magnet Bus P.S. C2
_____	C3	Tev Magnet Bus P.S. C3
_____	D0	Lo Beta P.S. Q2-4
_____	D0	Lo Beta P.S. Q3
_____	D0	Lo Beta P.S. Q5
_____	D0	Lo Beta P.S. Q6
_____	D2	Tev Magnet Bus P.S. D2
_____	D3	Tev Magnet Bus P.S. D3
_____	E2	Tev Magnet Bus P.S. E2
_____	E3	Tev Magnet Bus P.S. E3
_____	F2	Tev Magnet Bus P.S. F2
_____	F3	Tev Magnet Bus P.S. F3