

Safe Work Practices

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| <p>Title:</p> <h2>Switching Metal Clad Breaker Devices</h2> | Reference: | Revision: |
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1.0 PREPARATION

- 1.1 Ensure a Work Request Application has been applied for and granted for all non-emergency work.
- 1.2 It is not necessary, but helpful, to have a printed copy of all switching orders, when available.
- 1.3 Review the System One-Line Diagram to verify switching orders.
- 1.4 Before entering a substation/switching station, proper PPE must be worn. (Versant Power Safety Manual Section 2)
- 1.5 It may be necessary, upon entering a company facility, that the alarm system is disabled. An end user pass code can be used to defeat the system.

2.0 SAFETY PRECAUTIONS

- 2.1 The arc flash boundary for all Metal Clads is anywhere within the metal clad unit. For open rooms (Park St, etc.), anywhere in the room, for outdoor units 40 feet.
- 2.2 ARC-4 is required. (Bomb Suit)

3.0 OPERATIONAL ASPECTS

- 3.1 Training will include a walk through and explanation of:
 - Worm gear to raise and lower unit
 - Bicycle chain coupler
 - Safety shutters that cover the internal primary bushings
 - Grease points
 - Mercury switches
 - Multiple safety mechanisms that will trip the breaker
 - Limit switches
 - Springs on connector that make the tap
 - Removable motor driver unit that powers the raise and lower functions
 - Bay designations (For example: M1, M2, etc.)
- 3.2 Explain the importance of not slamming the cabinet doors

4.0 PROCEDURE TO OPEN THE BREAKER (Various differences per location. Be familiar with the operation of the breaker. If in doubt, contact PST)

- 4.1 Procedures for obtaining a red tag on BW8-PS at Park St
 - The switchman will call the System Operator and ask for a red tag on the breaker and disconnects.
 - Via SCADA, the System Operator will check BW8-1 and BW7-1 are both closed and carrying load.

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| <ul style="list-style-type: none">▪ Via SCADA, the System Operator will check 13BS1 is closed and carrying load. (This is the tie breaker on the bus at Park St).▪ Via SCADA, the System Operator will open BW8-PS, install a red tag and check line flow.▪ After receiving orders to do so and repeating with 3 part conversation, the switchman will place the BW8-PS 43 device to local and red tag, and then check the breaker to be mechanically open. Green open indicator on the front of the breaker.▪ Supplemental checks are:<ul style="list-style-type: none">○ Check current flow on Satec meter, should be zero.○ A green light should be lit on the front of the cabinet door.○ Orders will also be given to rack out the BW8-PS disconnects, check open, and install a red tag on those disconnects. | | |
| 5.0 RACKING “OUT” THE BREAKER | | |
| <ul style="list-style-type: none">5.1 If not already in place, a motor driver is installed.5.2 This unit should slide into a notch and secured with a locking hasp.5.3 It should not be forced but gently twisted into position.5.4 Check the switch on the motor to be in the off (middle) position and plug the motor into its wiring receptacle. This plug can only be inserted one way, so verify proper orientation.5.5 While keeping your body out of the cabinet, reach around and pull the lever to engage the motor. Hold this lever until the breaker lowers completely down. Limit switches will stop the motor automatically.5.6 A loud “clunk” is heard, which will signify the interlock is discharging the close spring.5.7 Release the lever, switch the motor to the off position and remove the plug from the receptacle. This will prevent any accidental operation.5.8 A red tag may now be installed on the disconnects. Usually it is placed on the locking hasp that secures the motor.5.9 Report and repeat switching orders to obtain your red tag protection. The procedure is now complete. | | |
| 6.0 PROCEDURE TO CLOSE THE BREAKER | | |
| <ul style="list-style-type: none">6.1 Procedures for removing a red tag from BW8-PS at Park St<ul style="list-style-type: none">▪ Report clear of your red tag protection on BW8-PS.▪ The System Operator will give the switching orders and switchman will repeat using 3 part conversation.▪ Check BW8-PS 43 device in local and check the breaker mechanically open.▪ Remove the red tag from disconnects, and rack in BW8-PS disconnects. | | |
| 7.0 RACKING “IN” THE BREAKER AND RETURNING TO SERVICE | | |
| <ul style="list-style-type: none">7.1 Ensure the switch on the motor driver is in the off (middle) position.7.2 Plug the motor into its receptacle.7.3 While keeping your body out of the cabinet, reach around and pull the lever to engage the motor. Hold this lever until the breaker is place. Limit switches will stop it automatically.7.4 Once the breaker is engaged, the breaker springs will be recharged. | | |

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| <p>7.5 The control plug on top of the breaker may not be seated completely and may need to be tapped gently to secure a proper fit.</p> <p>7.6 The motor driver may now be removed and returned to proper storage.</p> <p>7.7 Carefully close the cabinet door. To avoid jarring the relays and tripping the breaker. The green light should be back on.</p> <p>7.8 Remove the red tag from the breaker and switch the 43 device to remote.</p> <p>7.9 Clear the room and report switching to System Operator.</p> <p>7.10 Via SCADA: Red tag is removed, BW8-PS is closed and line flow is checked.</p> <p>7.11 Switchman can also check line flow from the Satec meter on the breaker cabinet door. Also the red indicating light should be lit.</p> | | |
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