

## **Pin and Insulator Change Out 12 KV**

### **Chief Judge: Billy White**

### **(Journeyman Event)**

**Mean Time:** 8 Minutes

**Drop Dead Time:** 10 Minutes

#### **Event Summary:**

This is a 12kV simulated energized event. Teams will replace the polymer insulator and metal pole top pin and re secure the #2 ACSR with a single #4 aluminum "Hot" tie. Hot sticks must be used to perform this event. Wire tongs and saddles or lay out arms shall be used. Teams must provide their own live line tools.

#### **Event Specifications:**

1. See General Rules.
2. Teams will be allowed a five-minute set up time for questions and set up.
3. All tools and materials must stay on competitor provided tarp.
4. Climbers must wear class II or higher rated rubber gloves ground to ground.
5. "Hot" tie will be installed on new insulator after time starts.
6. Both sides of neutral and clevis must be covered.
7. The top of the pole must be covered when untying and tying conductor with rated cover.
8. Only approved live line tools can be used to raise or lower phase "NO SHOTGUNS"
9. Two positive points of control must be used to control the conductor during this event. (Having two positive points of control refers to using two secure points of contact or safety measures to handle or stabilize an object. This is a critical practice for safety when moving, lifting, or holding equipment or conductors to prevent unexpected movement, falls, or damage) One clamp stick and one wire tong is considered two points.
10. Slack blocks must be used to raise and lower the conductor if using one wire tong and must be controlled by both climbers.
11. Teams may utilize a layout arm as long as control is maintained while tying and untying the conductor (this will require an insulated tag line to the ground). Both climbers will be able to move the conductor together (both hands) once conductor is untied to the layout arm with approved live line tools.
12. Minimum Approach Distance (MAD) must be maintained.
13. There must be a minimum of six (6) wraps on each side of the insulator to be considered a complete tie. Please see attached photo of proper tie.
14. Time stops when both climbers have both feet on the ground.

#### **Materials Provided:**

- Insulator
- Pole Top Pin
- (2) 40" pieces of #4 aluminum

# Journeyman Event – Insulator Change

## 1. INSTALLING SINGLE “HOT” TIE ON SINGLE INSULATOR

### CAUTION

This tie should be installed on the insulator by ground crew or lineman before the insulator is placed in position.

### NOTE

On both single and double ties, tie wires should be attached to the insulator with a clockwise twist. The ties should also be wrapped around the conductor in a clockwise direction on each side of the insulator to prevent untwisting the tie wire where it is attached to the insulator.

a. Form a loop in the end of the tie wire approximately one inch in diameter, and make two complete turns around the tie wire at the base of the loop. These turns must be tight enough to prevent slippage, which would alter the size of the loop. Determine the length of tie wire required for six full turns around the conductor plus the length required around the insulator, and allow for two or more of the turns to secure the tie to the insulator. After the proper length has been determined, cut the tie wire at the un-looped end.

b. Prepare a second tie wire in the same manner.

c. Form a "U" in each tie wire to fit around the insulator and place the tie wires in position on the insulator. Be sure to form the loop so that the wire will fit closely around the insulator, and pull both tie wires tightly into position.

d. Tie each wire to the insulator with at least two close turns at the un-looped ends of the tie. Make certain that the ties are tight around the insulator.

e. Shape the ties to form a letter "S" slightly below the groove of the insulator to prevent their extending too far from and above the insulator.

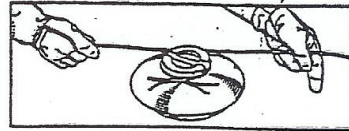
f. With the conductor transferred to and held securely in the groove of the insulator, the tie wires are ready to be wrapped around the conductor. This job can be done with whatever tie sticks the linemen prefer. The rotary-prong stick is employed by many for faster tying of looped ties;

g. Engage the tie wire with the rotary prong and begin the wrapping operation. Two or three turns can usually be performed with the prong acting against the tie wire near the conductor. After the first few turns, the prong should be hooked into the loop at the end of the tie wire and wrapping continued until the end of the tie wire is reached. The tie wire must be turned six times around the conductor. When the tie is complete, the loop should be left up.

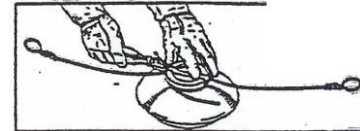
### NOTE

The tie wire should be rotated in opposite directions at each side of the insulator.

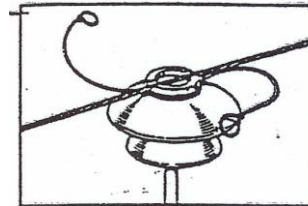
h. The tie wire should be wrapped around the conductor evenly as a neat job is always the one having greater strength.



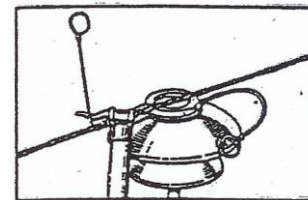
Pulling the ties tight around the insulator.



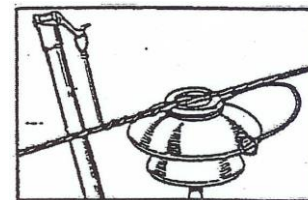
Wrapping one of the ties with lineman's pliers.



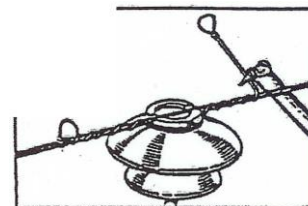
Both single ties in place ready for tying-in.



Starting the tying-in process with a rotary prong.



Rotary prong hooked into tie wire loop.



Tying at opposite side of insulator